FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE + BLUETOOTH + DTS/UNII a/b/g/n + ANT+ and NFC

FCC ID: PY7-TM0061

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ISSUE DATE: APRIL 22, 2015

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	3/10/15	Initial Issue	CHOON OOI
A	4/22/15	Revised Channel 13 power G and HT20 mode	CHOON OOI

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SONY MOBILE COMMUNICATIONS, INC.
EUT DESCRIPTION:	GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac + ANT+ and NFC
SERIAL NUMBER:	CB5A23Q9M5 (Conducted), CB5A23Q1WM (Radiated)
DATE TESTED:	FEBRUARY 19-MARCH 09, 2015

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC KDB 662911, RSS-GEN Issue 4, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☒ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE + BLUETOOTH + DTS/UNII a/b/g/n/ac + ANT+ and NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
2412 - 2467	802.11b	11	12.59
2472	802.11b	10.89	12.27
2412 - 2467	802.11g	13.6	22.80
2472	802.11g	10.1	10.14
2412 - 2467	802.11n HT20	12.9	19.68
2472	802.11n HT20	9.4	8.79

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna for the 802.11b/g, 802.11n HT20/HT40/ac80 modes with maximum peak gains as described below:

Frequency (MHz)	Antenna Gain (dBi)	
	Core0	Core1
2.4	-1.7	-5.4
2.44	-1.4	-3.8
2.48	-2.2	-4.1

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5.4. LIST OF TEST REDUCTION AND MODES

2400 - 2483.5 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	**Mode**	**Covered by**
2412 - 2472	802.11b Legacy 1TX	802.11b Legacy 1TX
2412 - 2472	802.11g Legacy 1TX	802.11g CDD 2TX
2412 - 2472	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n STBC 2TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n HT40 1TX	802.11n HT40 CDD 2TX
2412 - 2472	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX

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5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	SONY	EP880	3514W 01 S08328	N/A

I/O CABLES

Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini USB	Shielded	1.2m	N/A

TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

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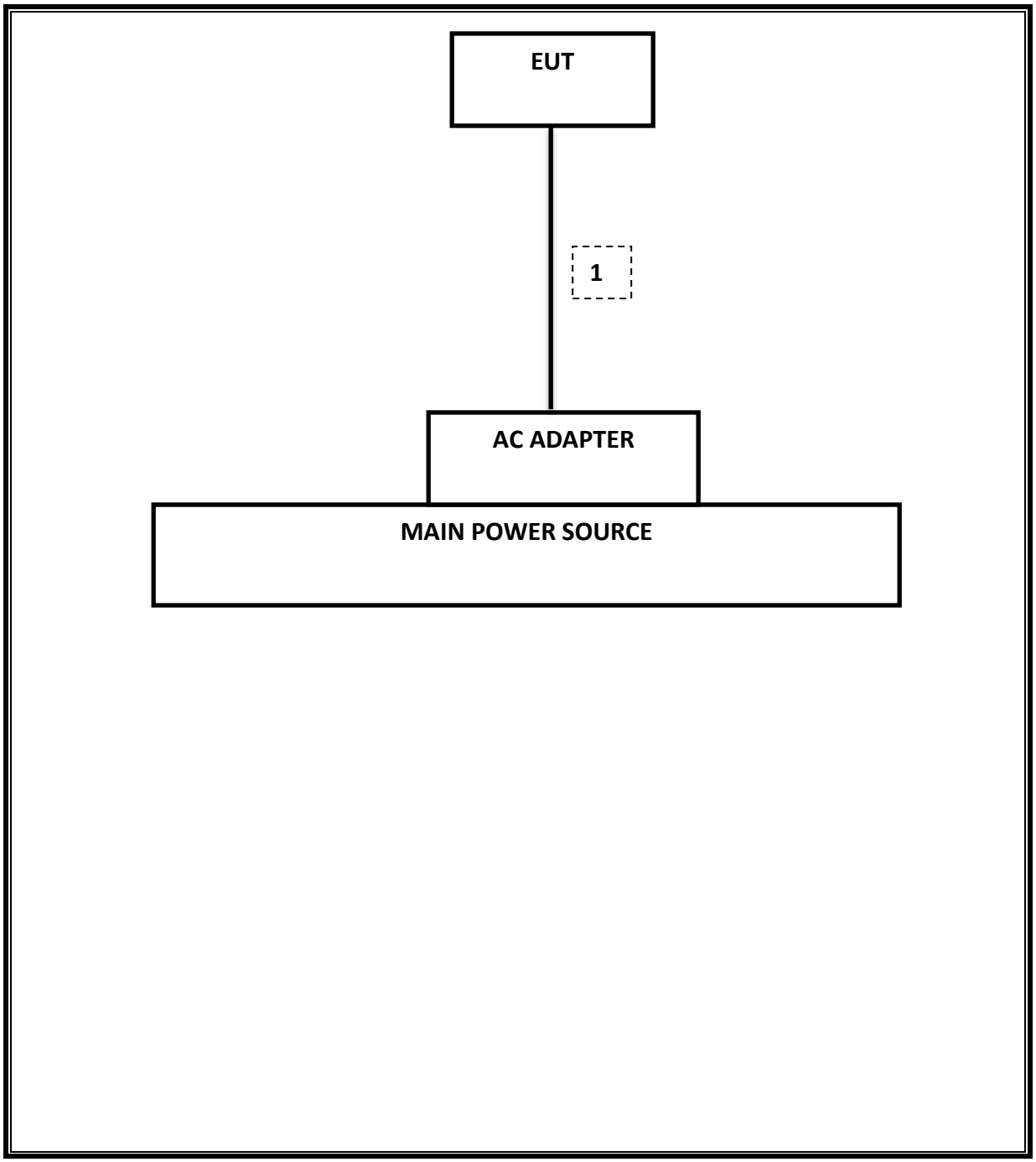
SETUP DIAGRAM FOR TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer,9KHz-40GHz	HP	8564E	C00986	04/01/15
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	100773	08/15/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
Antenna, Horn,18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/15
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/15
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/15
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 18GHz	Miteq	AFS42-00101800-25-S-42	1818466	05/09/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/15

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

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7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02:Measurement Procedure AVGPM-G is used for power and AVGPSD-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

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8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b	4.42	4.4	0.996	99.6%	0.00	0.010
802.11g	3.13	3.1	0.994	99.4%	0.00	0.010
802.11n HT20	1.48	1.5	0.985	98.5%	0.00	0.010

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9. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	7.58 MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-38.28 dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	11.3 dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-18.49 dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	47.63 dBuV (AV)
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	53.38 dBuV/m

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10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

RESULTS

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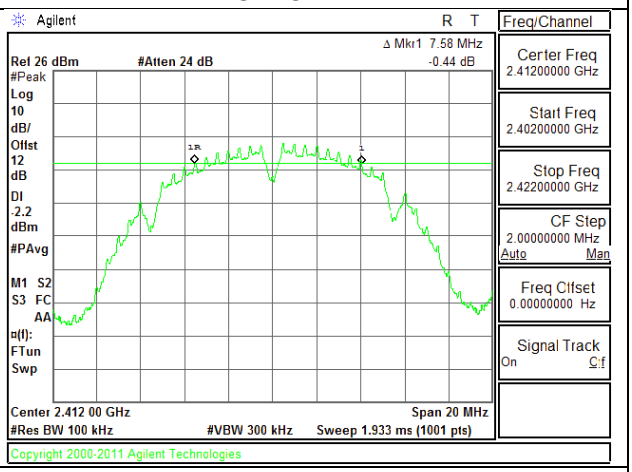
10.1.1. 6 dB BANDWIDTH PLOTS AND TABLE

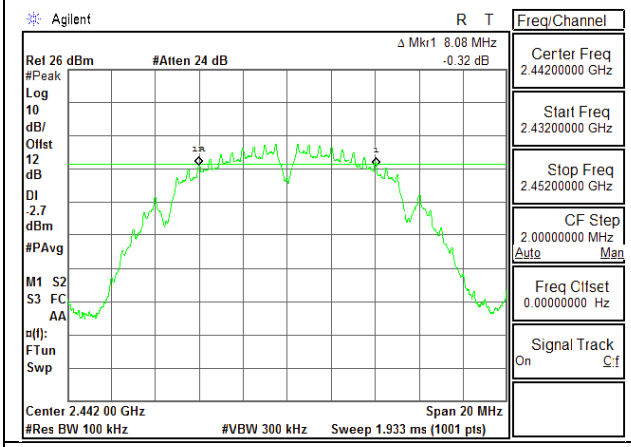
802.11b TEST RESULT TABLE (Chain 0)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	7.58	0.5
Middle	2442	8.08	0.5
High	2472	8.08	0.5

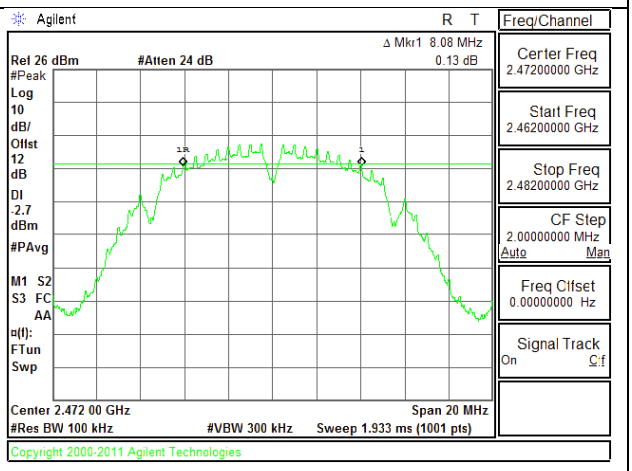
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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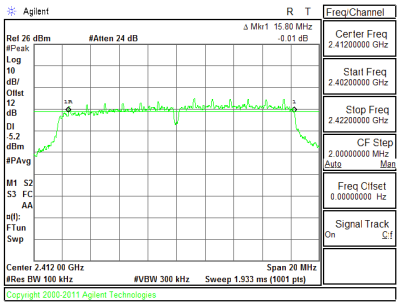
802.11g HT20 TEST RESULT TABLE

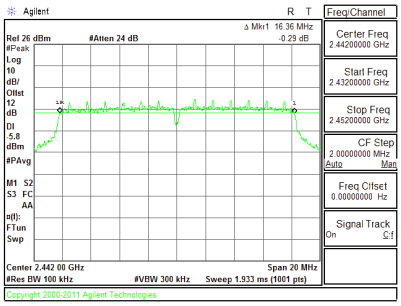
Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
2412	15.80	15.80	0.5
2442	16.36	16.38	0.5
2472	16.32	16.38	0.5
Worst	15.80		

CHAIN 0

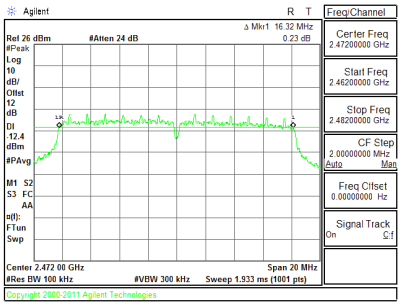
LOW CHANNEL



MID CHANNEL

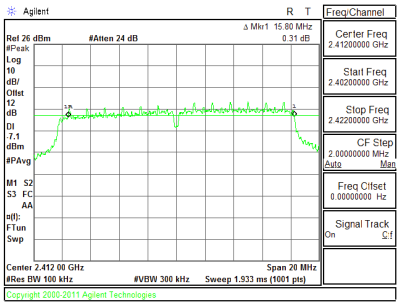


HIGH CHANNEL

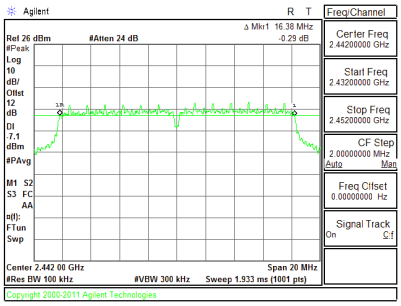


CHAIN 1

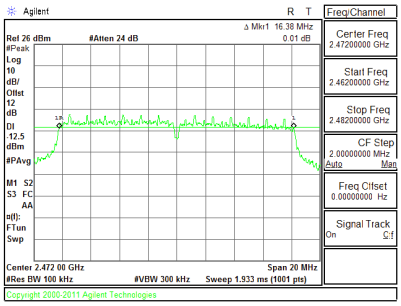
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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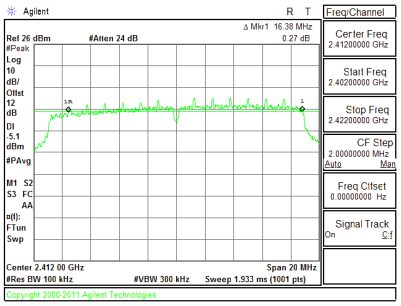
802.11n HT20 TEST RESULT TABLE

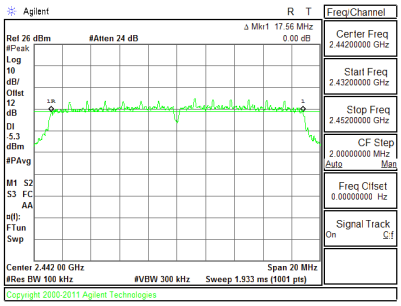
Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
2412	16.38	16.98	0.5
2442	17.56	17.62	0.5
2472	17.32	17.64	0.5
Worst	28.80		

CHAIN 0

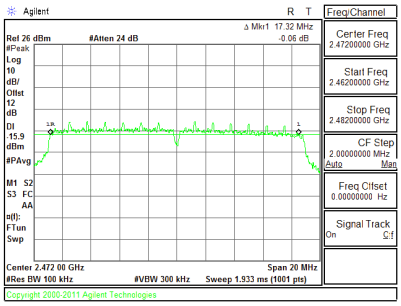
LOW CHANNEL



MID CHANNEL

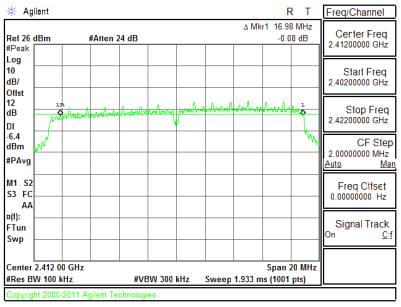


HIGH CHANNEL

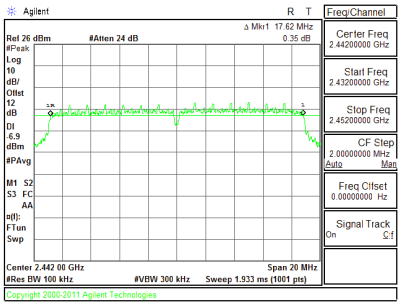


CHAIN 1

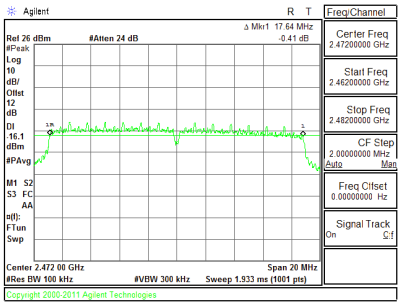
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

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10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

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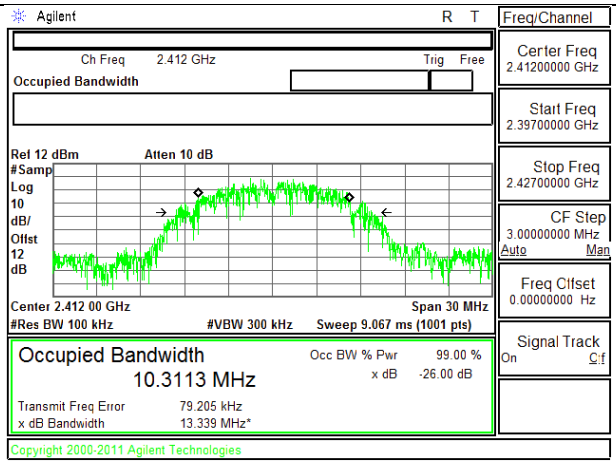
10.2.1. 99% BANDWIDTH PLOTS AND TABLE

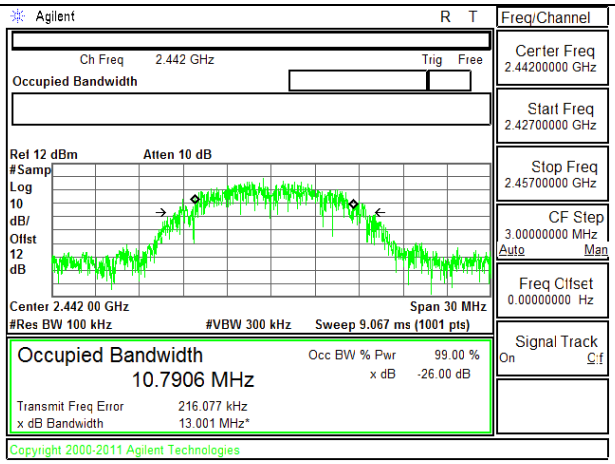
802.11b TEST RESULT TABLE (Chain 0)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	10.31
Middle	2442	10.79
High	2472	10.11
Worst		10.79

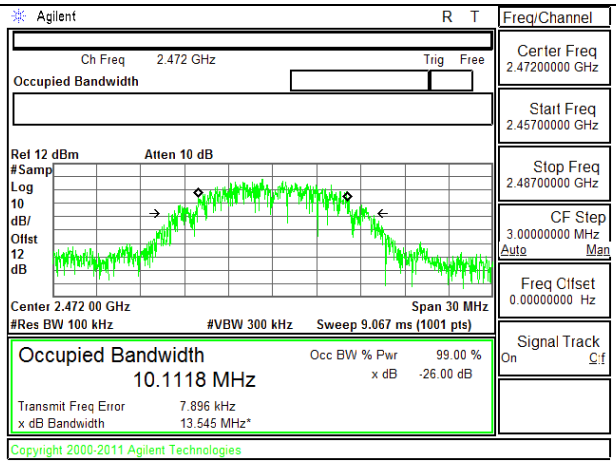
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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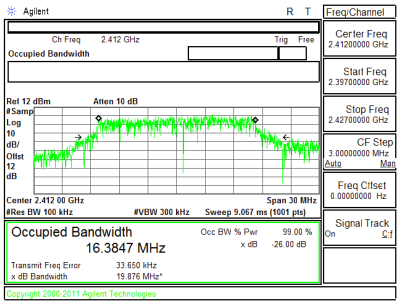
802.11g HT20 TEST RESULT TABLE

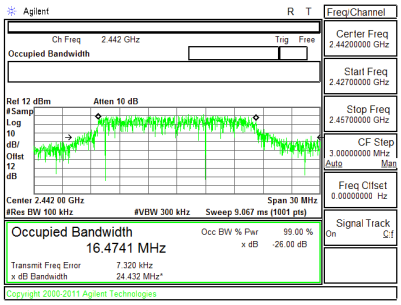
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	16.38	16.56
Mid	2442	16.47	16.41
High	2472	16.40	16.42

CHAIN 0

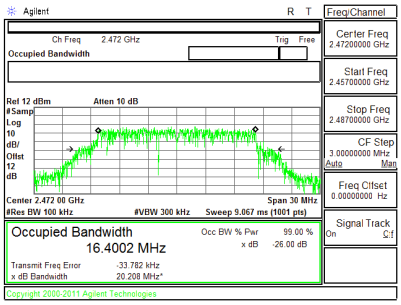
LOW CHANNEL



MID CHANNEL

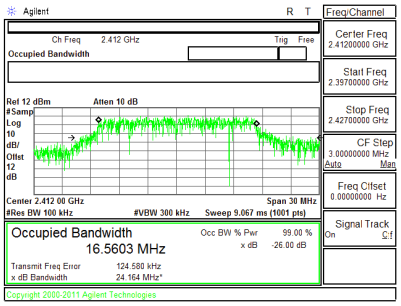


HIGH CHANNEL

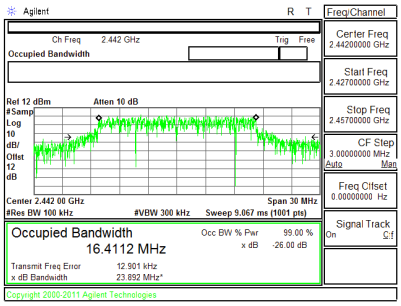


CHAIN 1

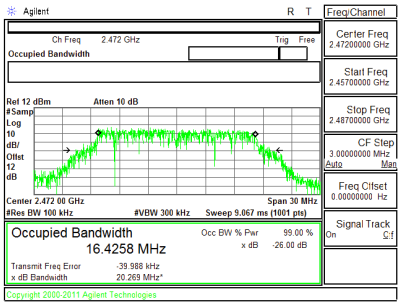
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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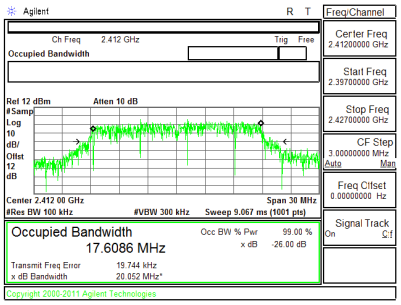
802.11n HT20 TEST RESULT TABLE

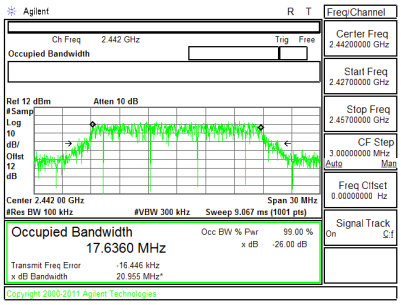
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	17.60	17.58
Mid	2442	17.63	17.62
High	2472	17.66	17.6

CHAIN 0

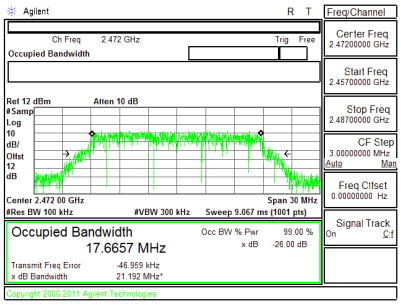
LOW CHANNEL



MID CHANNEL

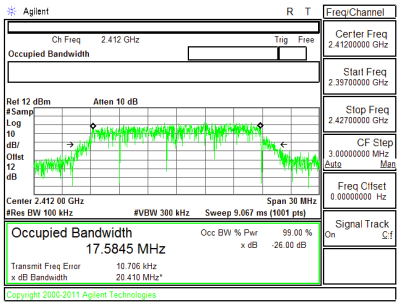


HIGH CHANNEL

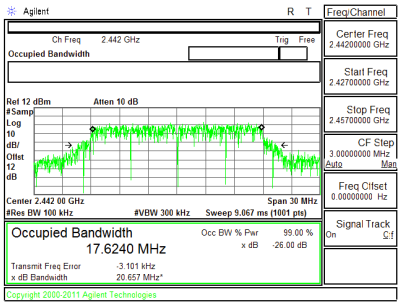


CHAIN 1

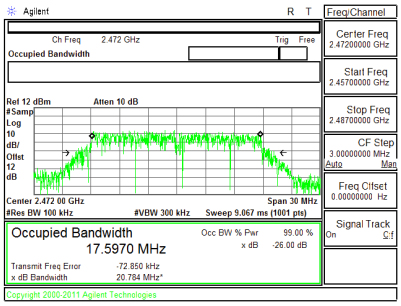
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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10.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.2 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

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DIRECTIONAL ANTENNA GAIN

For Power: The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-1.40	-3.80	-2.44

For PSD: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-1.40	-3.80	0.49

RESULTS

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10.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
1	2412	-1.40	30.00	30	36	30.00
7	2442	-1.40	30.00	30	36	30.00
12	2467	-1.40	30.00	30	36	30.00
13	2472	-1.40	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	11.00	11.00	30.00	-19.00
7	2442	10.80	10.80	30.00	-19.20
12	2467	10.98	10.98	30.00	-19.02
13	2472	10.89	10.89	30.00	-19.11
Worst			11.00		

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10.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
1	2412	-2.44	30.00	30	36	30.00
7	2442	-2.44	30.00	30	36	30.00
12	2467	-2.44	30.00	30	36	30.00
13	2472	-2.44	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	10.50	9.50	13.04	30.00	-16.96
7	2442	10.60	9.00	12.88	30.00	-17.12
12	2467	11.26	9.76	13.58	30.00	-16.42
13	2472	6.93	7.16	10.06	30.00	-19.94

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10.3.3. 802.11n MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
1	2412	-2.44	30.00	30	36	30.00
7	2442	-2.44	30.00	30	36	30.00
12	2467	-2.44	30.00	30	36	30.00
13	2472	-2.44	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	10.30	8.70	12.58	30.00	-17.42
7	2442	10.70	9.00	12.94	30.00	-17.06
12	2467	9.18	9.37	12.29	30.00	-17.71
13	2472	6.38	6.47	9.44	30.00	-20.56

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10.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

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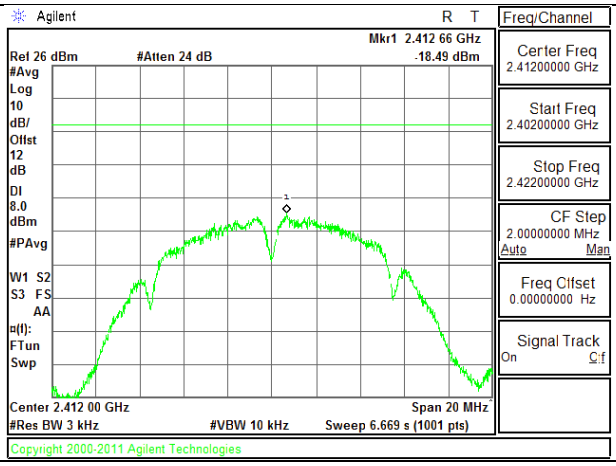
10.4.1. POWER SPECTRAL DENSITY PLOTS AND TABLE

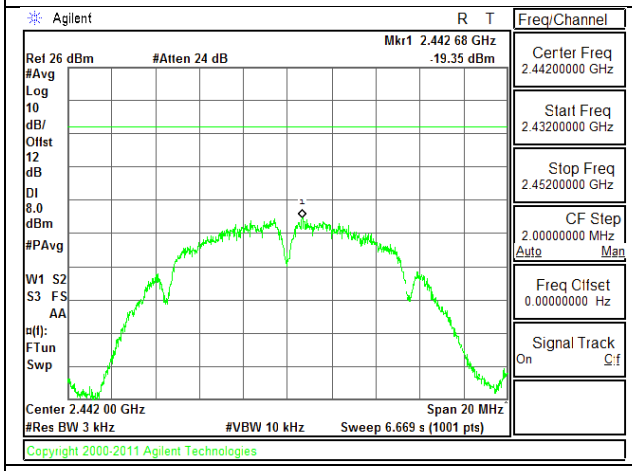
802.11b TEST RESULT TABLE (Chain 0)

Channel	Frequency (MHz)	Chain 0 (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.49	8	-26.49
Middle	2442	-19.35	8	-27.35
High	2472	-19.06	8	-27.06

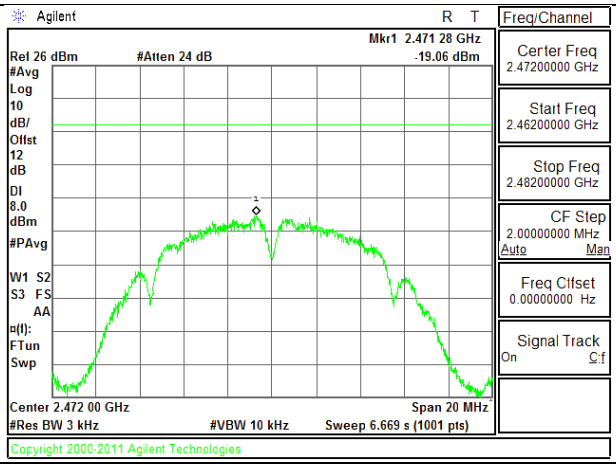
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

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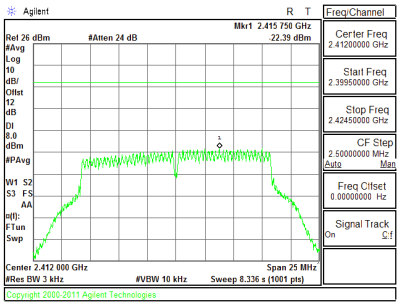
802.11g HT20 TEST RESULT TABLE

PSD Results

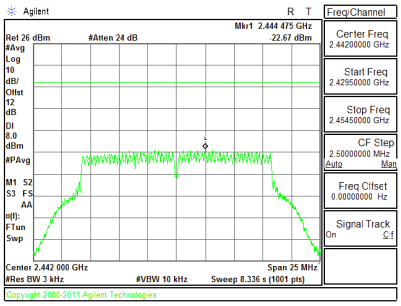
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-22.39	-23.85	-20.05	8.0	-28.0
Mid	2442	-22.67	-22.63	-19.64	8.0	-27.6
High	2472	-28.84	-29.43	-26.11	8.0	-34.1

CHAIN 0

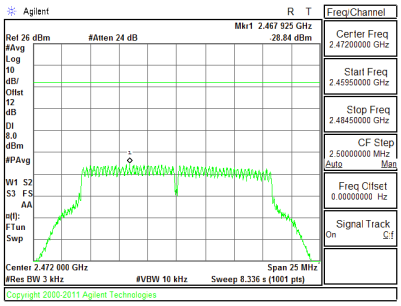
LOW CHANNEL



MID CHANNEL

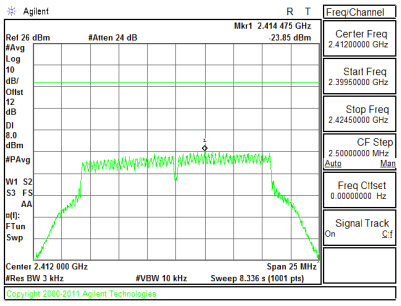


HIGH CHANNEL

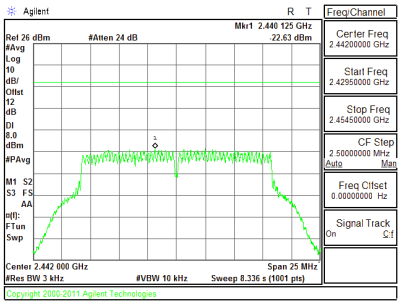


CHAIN 1

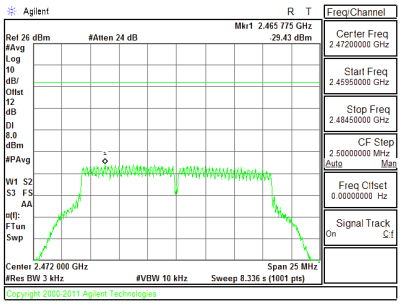
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

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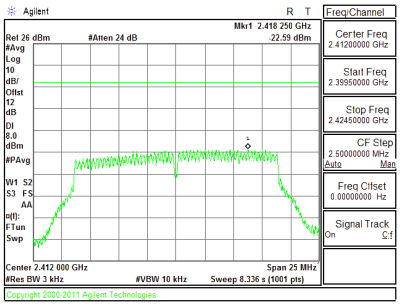
802.11n HT20 TEST RESULT TABLE

PSD Results

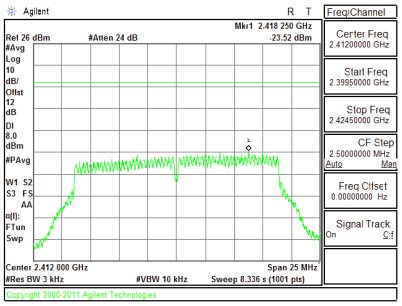
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-22.59	-23.52	-20.02	8.0	-28.0
Mid	2442	-23.04	-24.45	-20.68	8.0	-28.7
High	2472	-33.25	-33.24	-30.23	8.0	-38.2

CHAIN 0

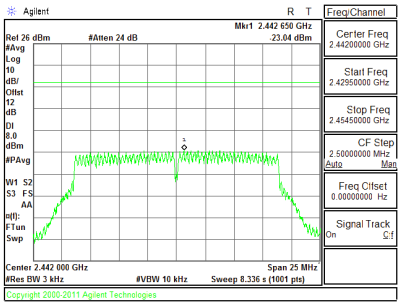
LOW CHANNEL



MID CHANNEL

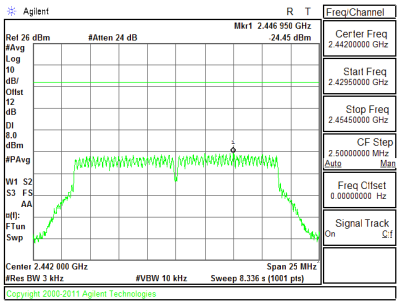


HIGH CHANNEL

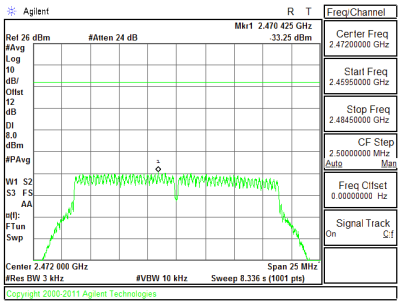


CHAIN 1

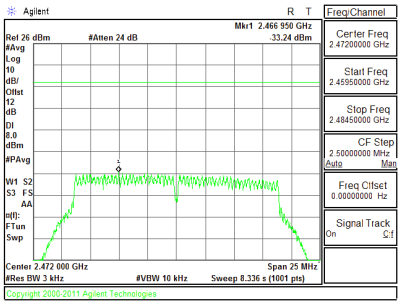
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



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10.5. CONDUCTED SPURIOUS AND OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

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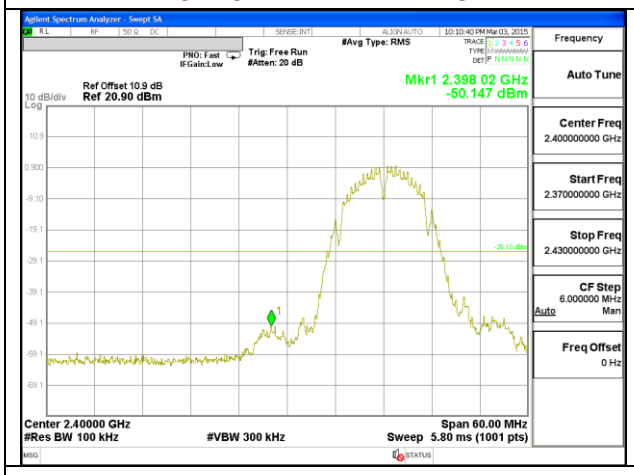
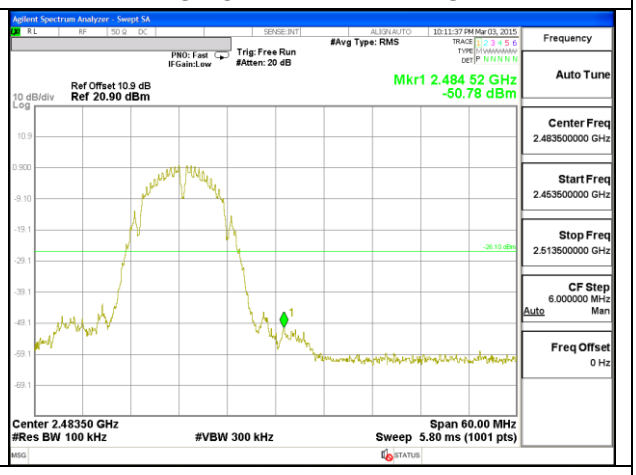
10.5.1. BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11b Mode – Chain 0

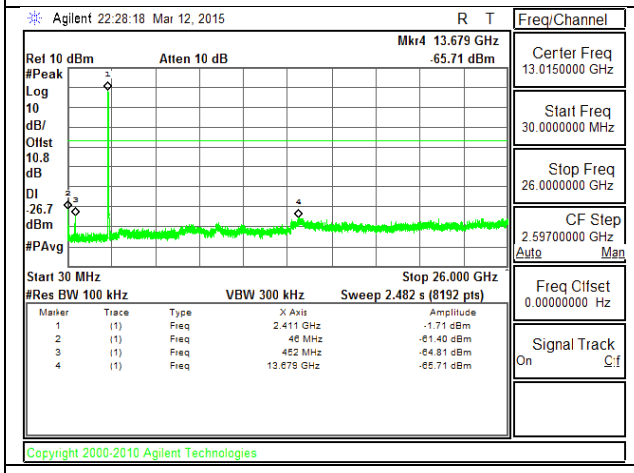
LOW CHANNEL BANDEDGE



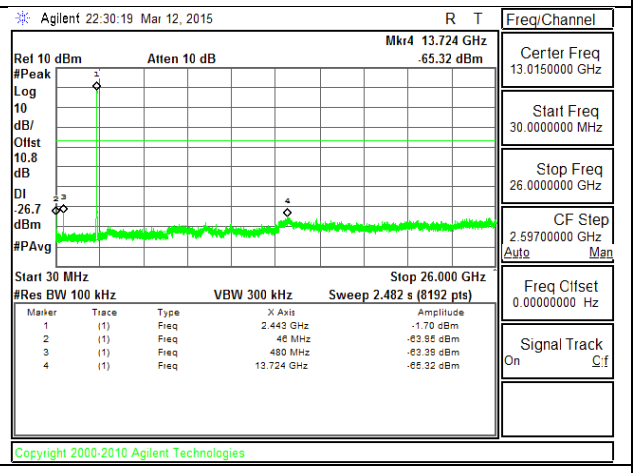
HIGH CHANNEL BANDEDGE



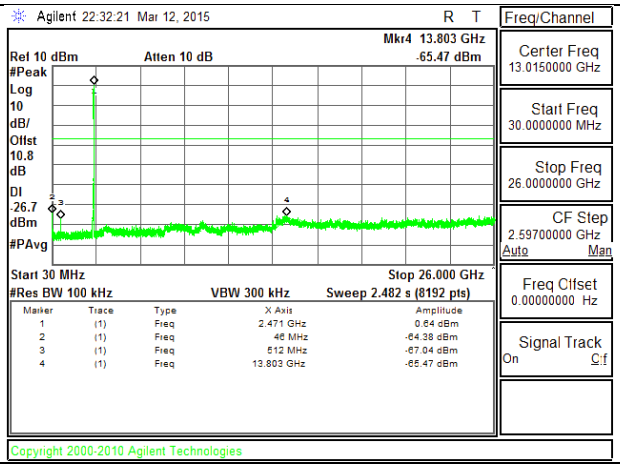
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



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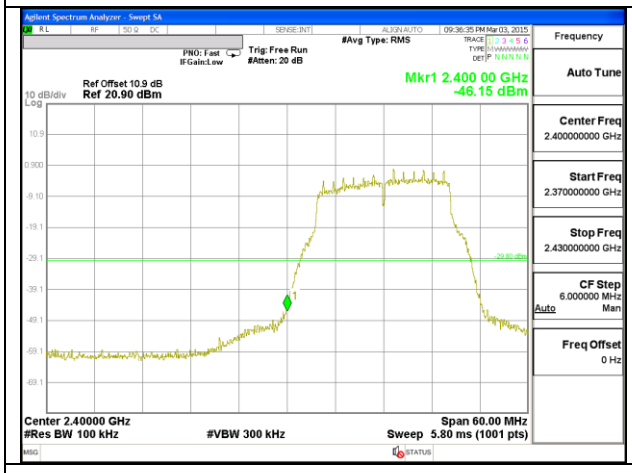
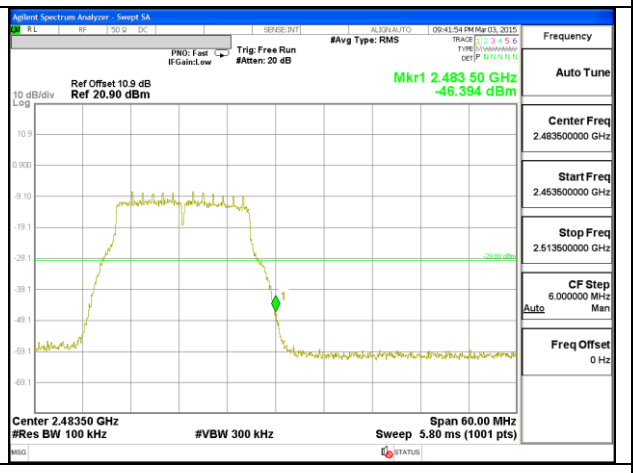
802.11g Mode – Chain 0

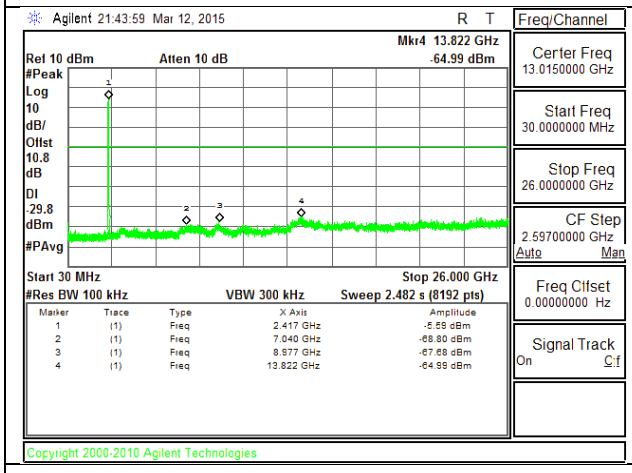
LOW CHANNEL BANDEDGE



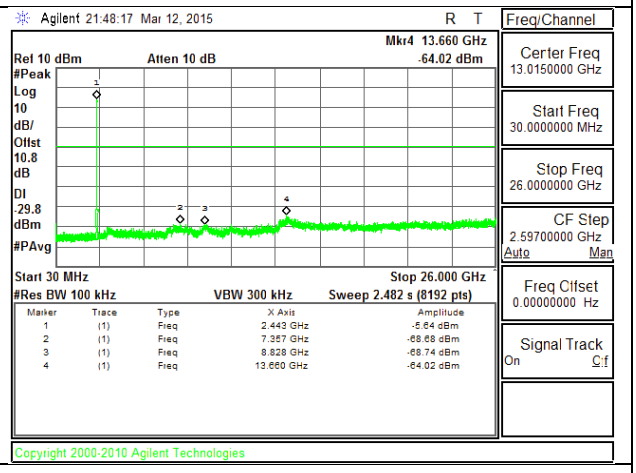
HIGH CHANNEL BANDEDGE



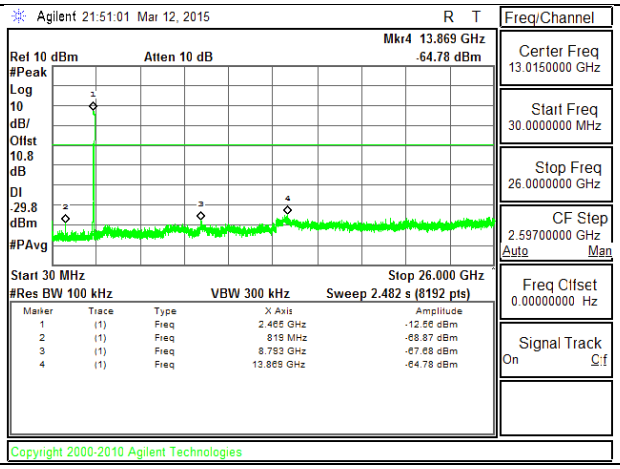
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



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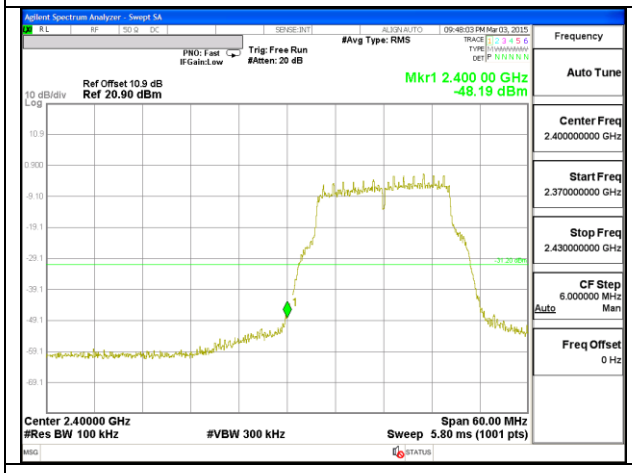
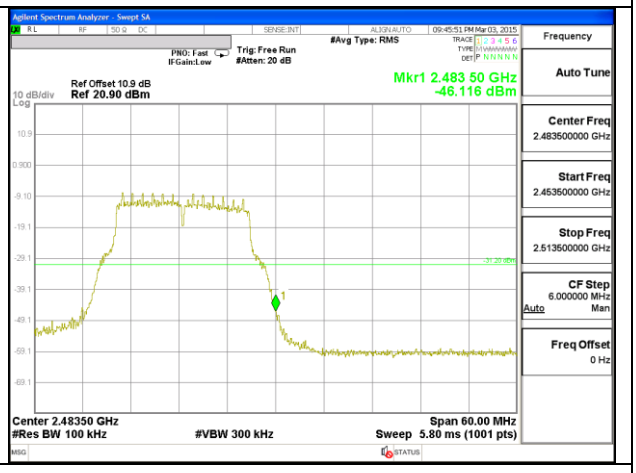
802.11g Mode – Chain 1

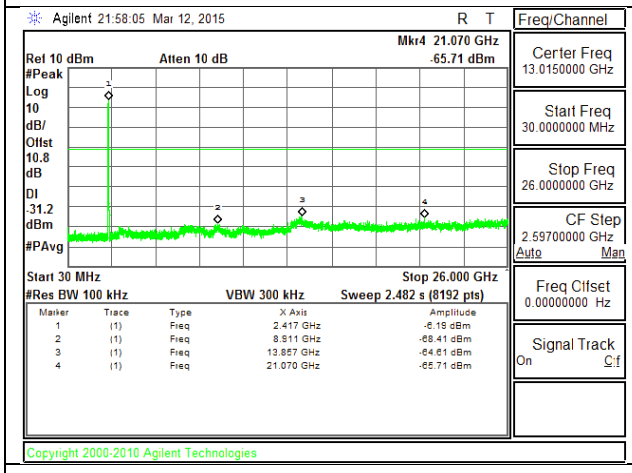
LOW CHANNEL BANDEDGE



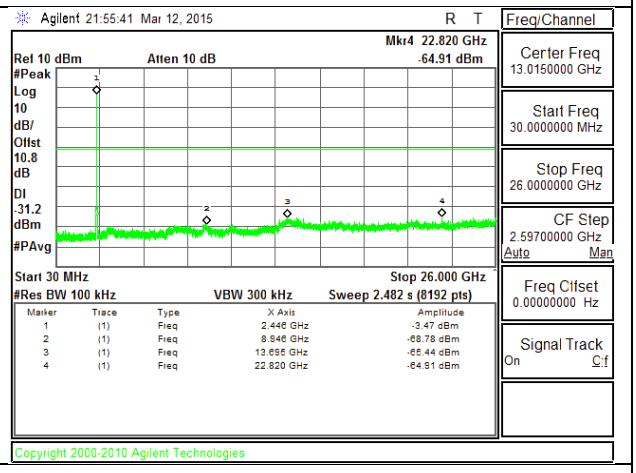
HIGH CHANNEL BANDEDGE



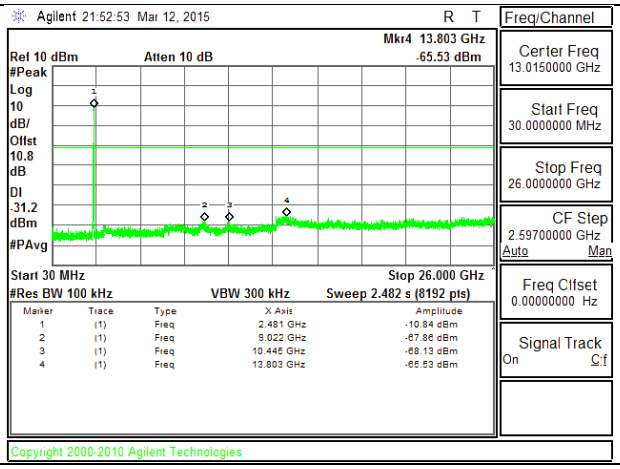
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



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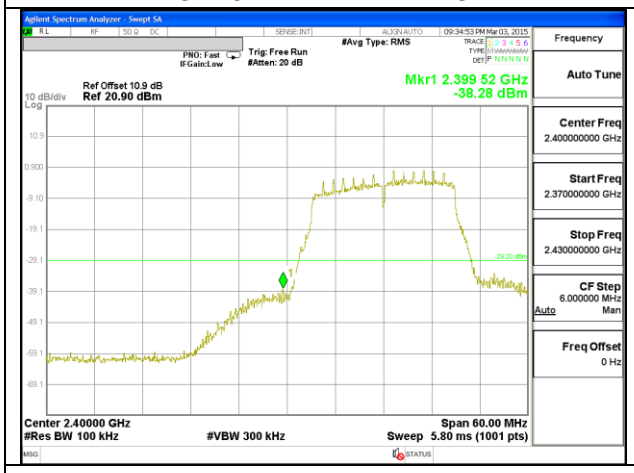
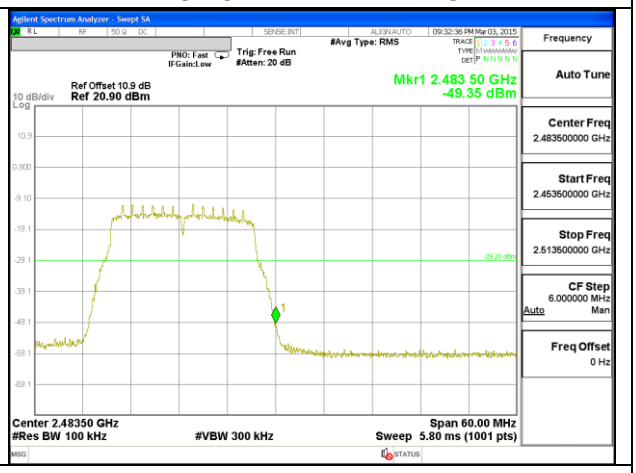
802.11n Mode – Chain 0

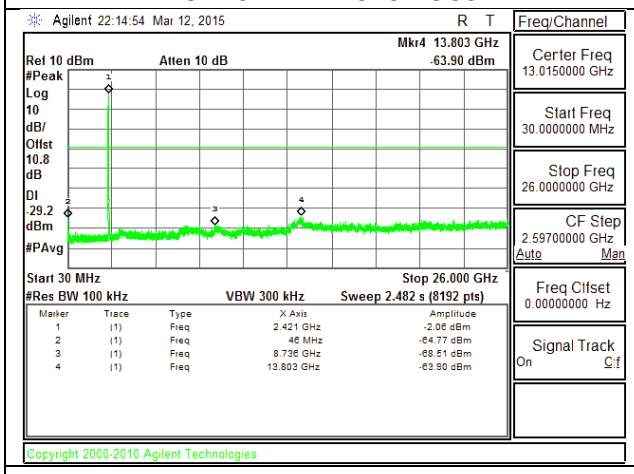
LOW CHANNEL BANDEDGE



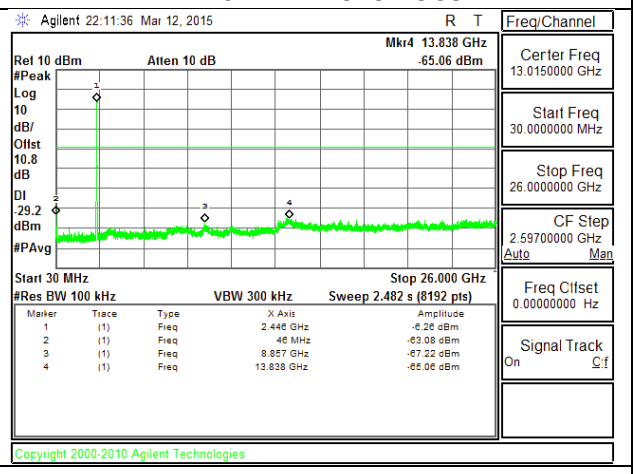
HIGH CHANNEL BANDEDGE



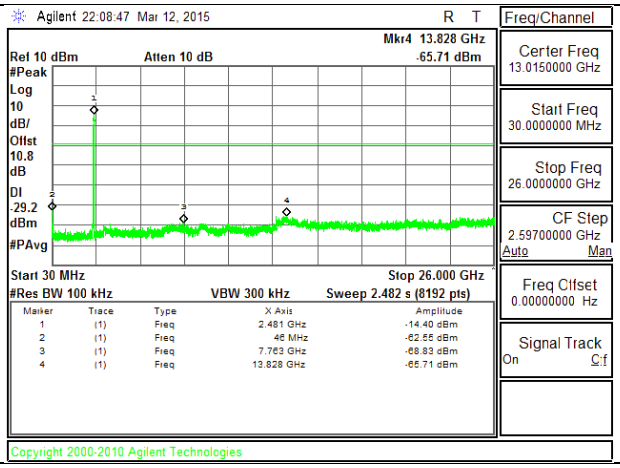
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



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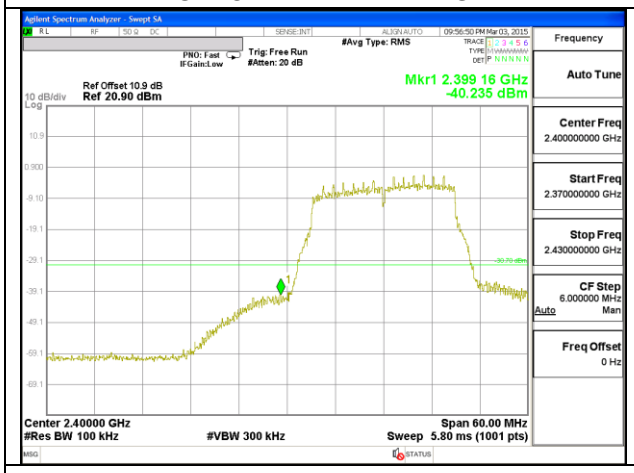
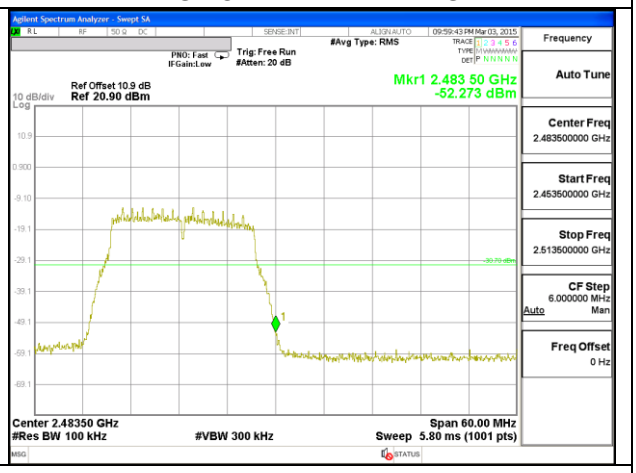
802.11n Mode – Chain 1

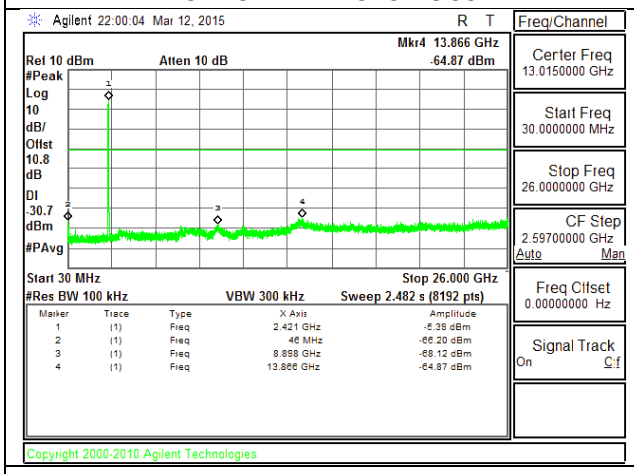
LOW CHANNEL BANDEDGE



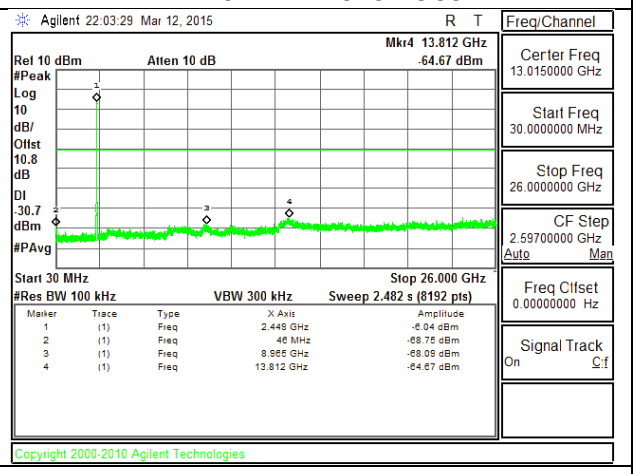
HIGH CHANNEL BANDEDGE



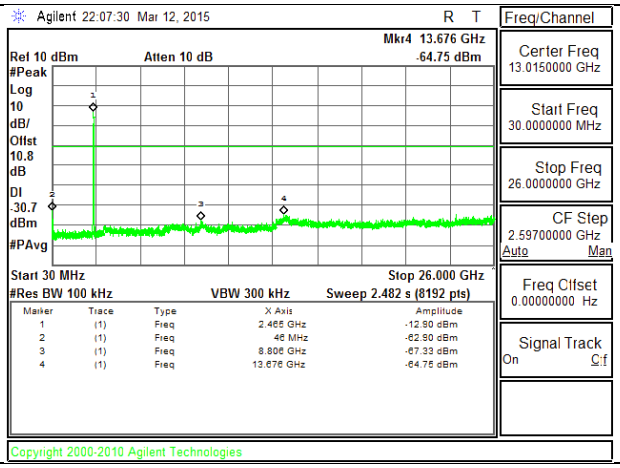
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



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11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0 dB; N mode = 0dB.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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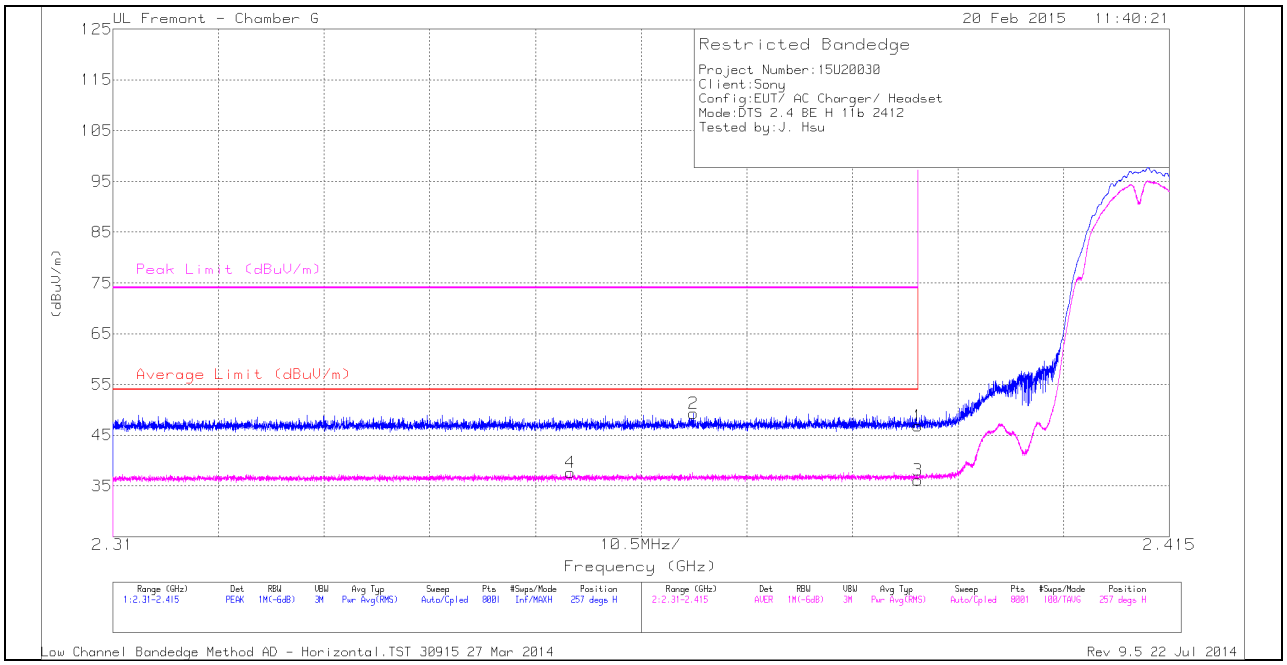
11.2. TRANSMITTER ABOVE 1 GHz

11.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.93	PK	31.8	-24.9	46.83	-	-	74	-27.17	257	180	H
2	* 2.368	42.47	PK	31.7	-24.9	49.27	-	-	74	-24.73	257	180	H
3	* 2.39	29.27	RMS	31.8	-24.9	36.17	54	-17.83	-	-	257	180	H
4	* 2.355	30.95	RMS	31.7	-25	37.65	54	-16.35	-	-	257	180	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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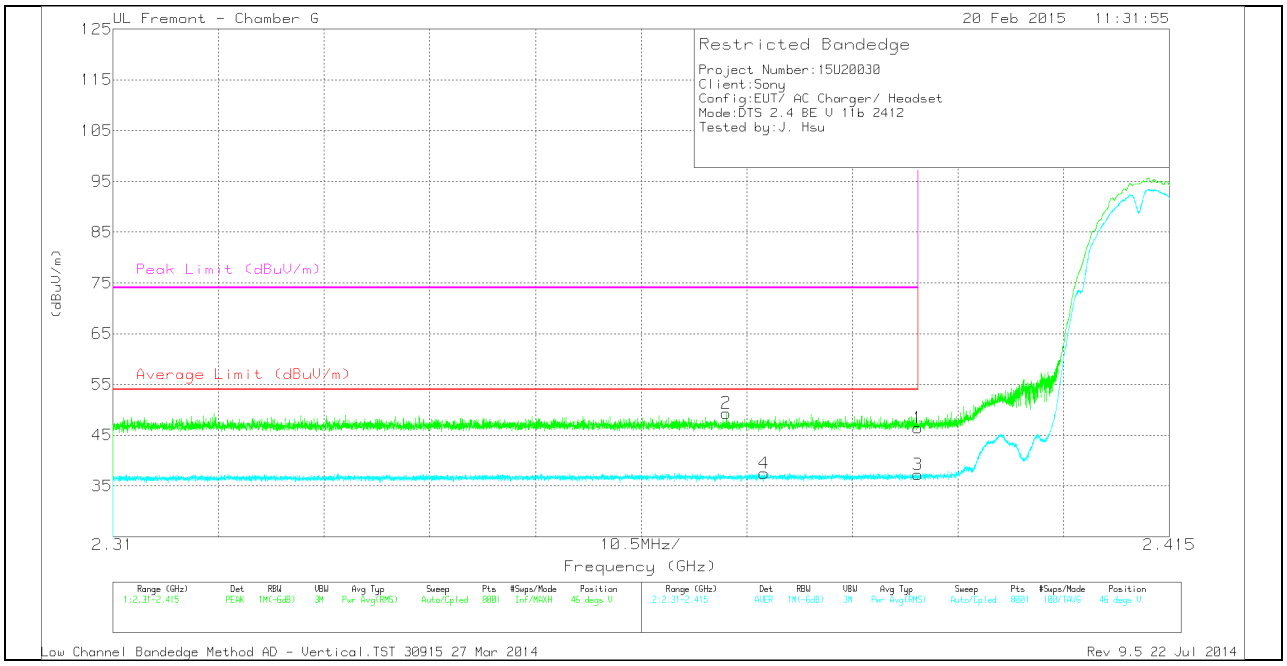
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.59	PK	31.8	-24.9	46.49	-	-	74	-27.51	46	235	V
2	* 2.371	42.56	PK	31.7	-24.9	49.36	-	-	74	-24.64	46	235	V
3	* 2.39	30.4	RMS	31.8	-24.9	37.3	54	-16.7	-	-	46	235	V
4	* 2.375	30.72	RMS	31.7	-24.9	37.52	54	-16.48	-	-	46	235	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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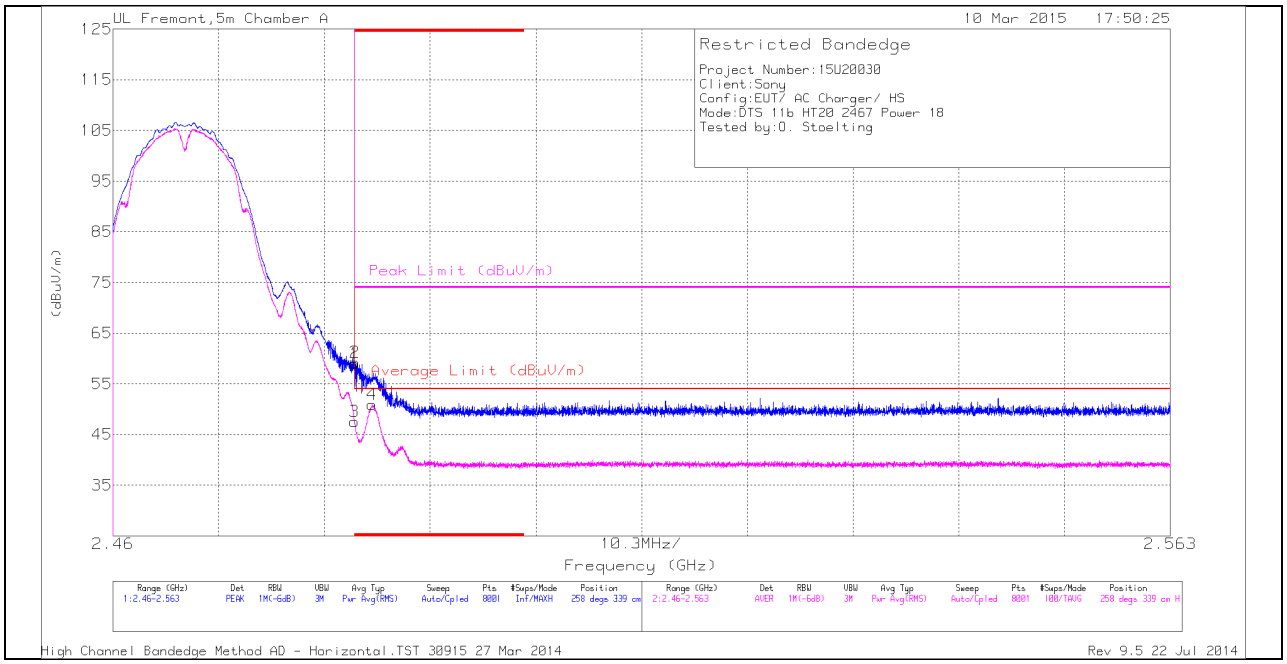
AUTHORIZED BANDEDGE (HIGH CHANNEL 12)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.77	PK	32.1	-21.9	58.97	-	-	74	-15.03	258	339	H
2	* 2.484	49.01	PK	32.1	-21.9	59.21	-	-	74	-14.79	258	339	H
3	* 2.484	37.31	RMS	32.1	-21.9	47.51	54	-6.49	-	-	258	339	H
4	* 2.485	40.68	RMS	32.1	-21.9	50.88	54	-3.12	-	-	258	339	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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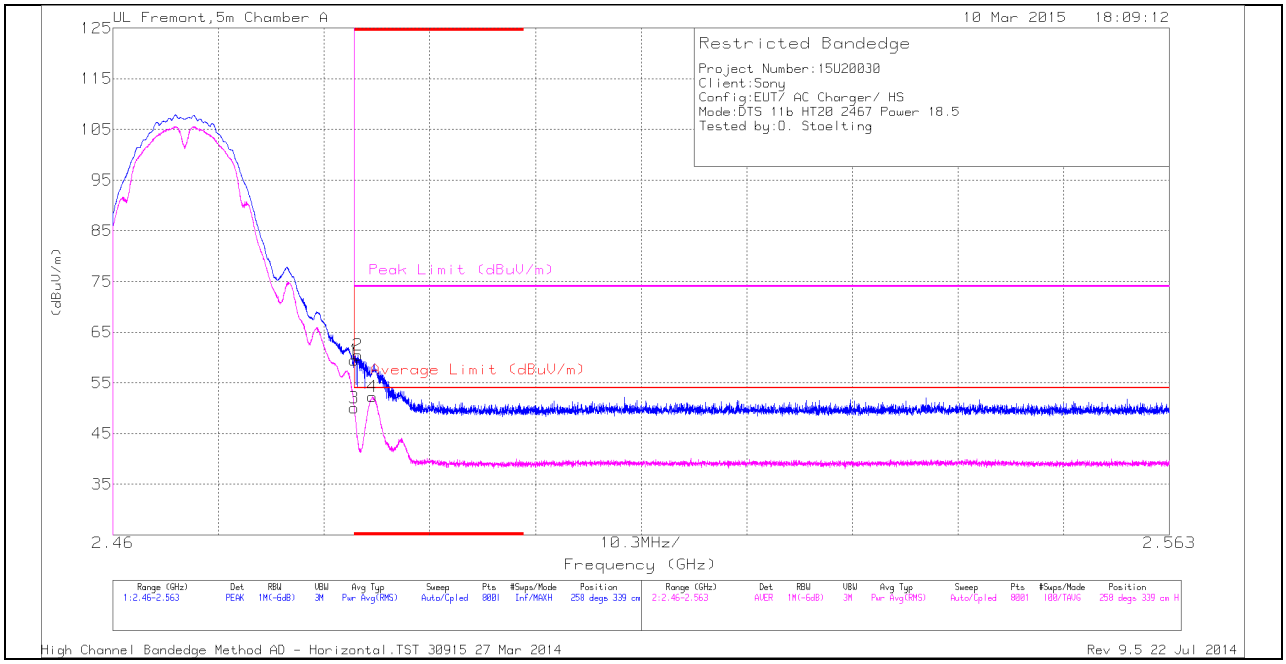
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	49.32	PK	32.1	-21.9	59.52	-	-	74	-14.48	258	339	H
2	* 2.484	50.23	PK	32.1	-21.9	60.43	-	-	74	-13.57	258	339	H
3	* 2.484	39.89	RMS	32.1	-21.9	50.09	54	-3.91	-	-	258	339	H
4	* 2.485	42.06	RMS	32.1	-21.9	52.26	54	-1.74	-	-	258	339	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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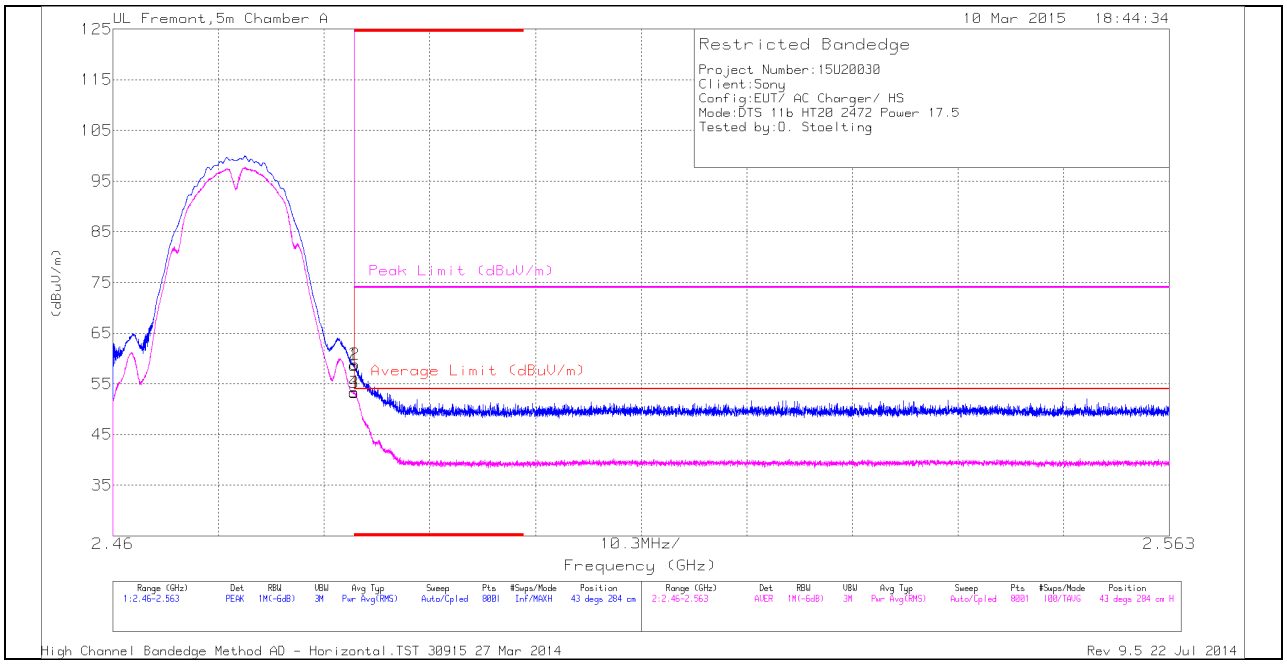
AUTHORIZED BANDEDGE (HIGH CHANNEL 13)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.47	PK	32.1	-21.9	58.67	-	-	74	-15.33	43	284	H
2	* 2.484	48.65	PK	32.1	-21.9	58.85	-	-	74	-15.15	43	284	H
3	* 2.484	43.1	RMS	32.1	-21.9	53.3	54	-.7	-	-	43	284	H
4	* 2.484	43.18	RMS	32.1	-21.9	53.38	54	-.62	-	-	43	284	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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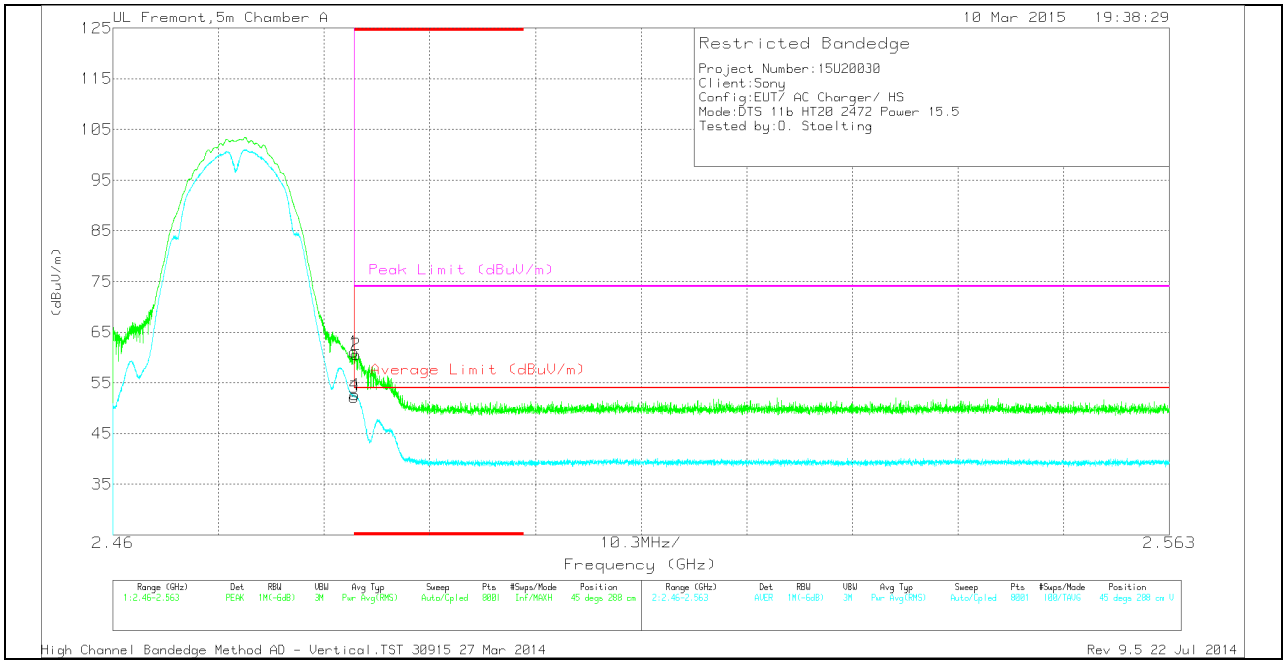
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	50.95	PK	32.1	-21.9	61.15	-	-	74	-12.85	45	288	V
2	* 2.484	50.43	PK	32.1	-21.9	60.63	-	-	74	-13.37	45	288	V
3	* 2.484	42	RMS	32.1	-21.9	52.2	54	-1.8	-	-	45	288	V
4	* 2.484	42.43	RMS	32.1	-21.9	52.63	54	-1.37	-	-	45	288	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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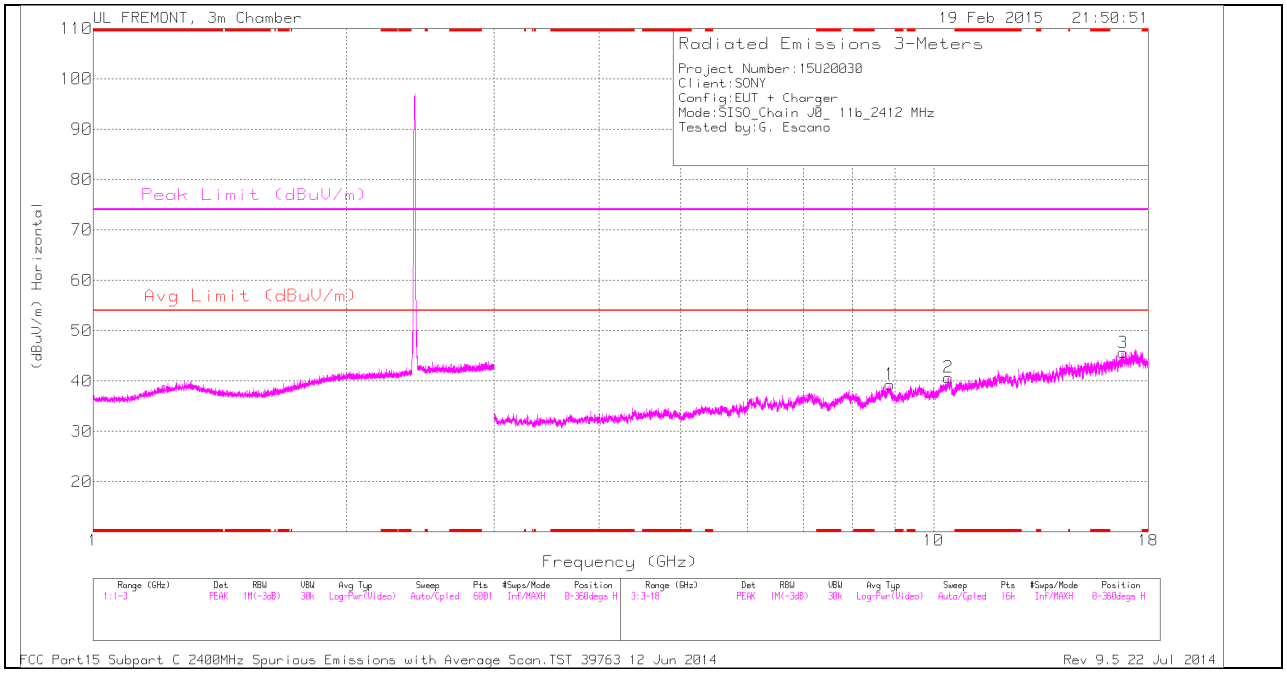
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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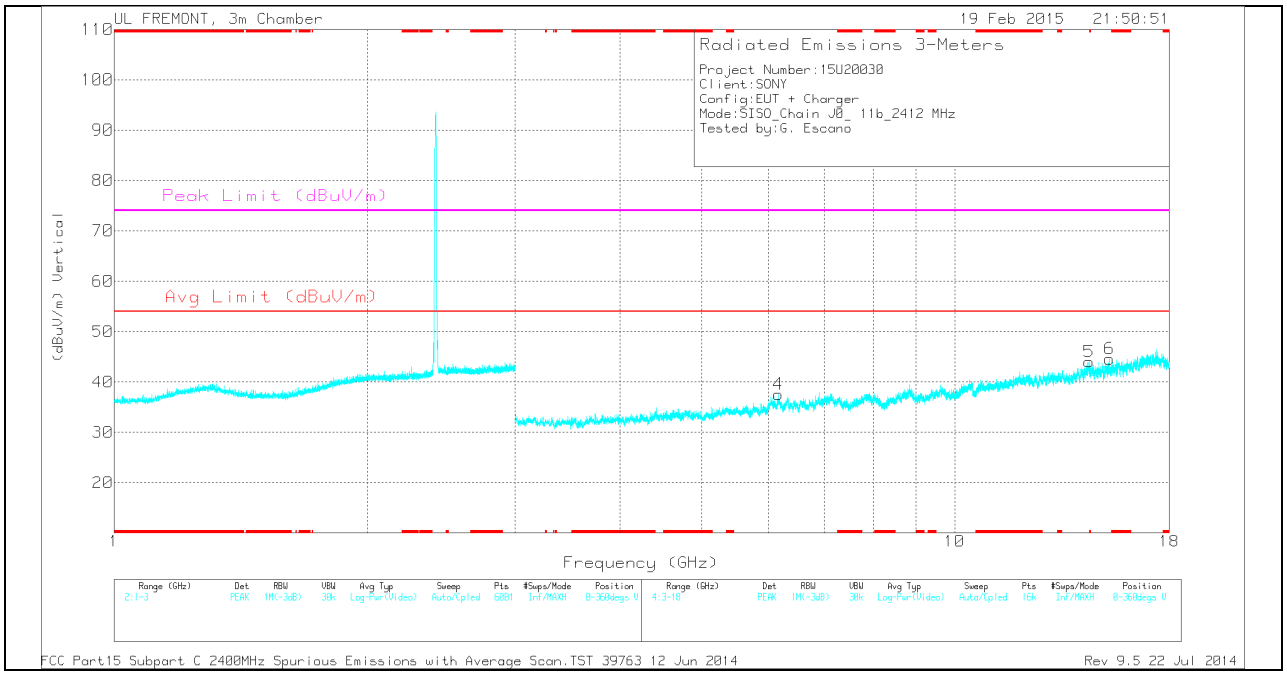
LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	6.167	32.05	PK	35.3	-29.8	0	37.55	-	-	-	-	0-360	200	V
1	8.873	30.01	PK	35.9	-26.6	0	39.31	-	-	-	-	0-360	100	H
2	10.409	28.41	PK	37.3	-25	0	40.71	-	-	-	-	0-360	100	H
5	14.45	31.32	PK	39.6	-26.9	0	44.02	-	-	-	-	0-360	100	V
6	15.288	31.5	PK	40	-26.9	0	44.6	-	-	-	-	0-360	100	V
3	16.789	28.73	PK	41.2	-24.3	0	45.63	-	-	-	-	0-360	200	H

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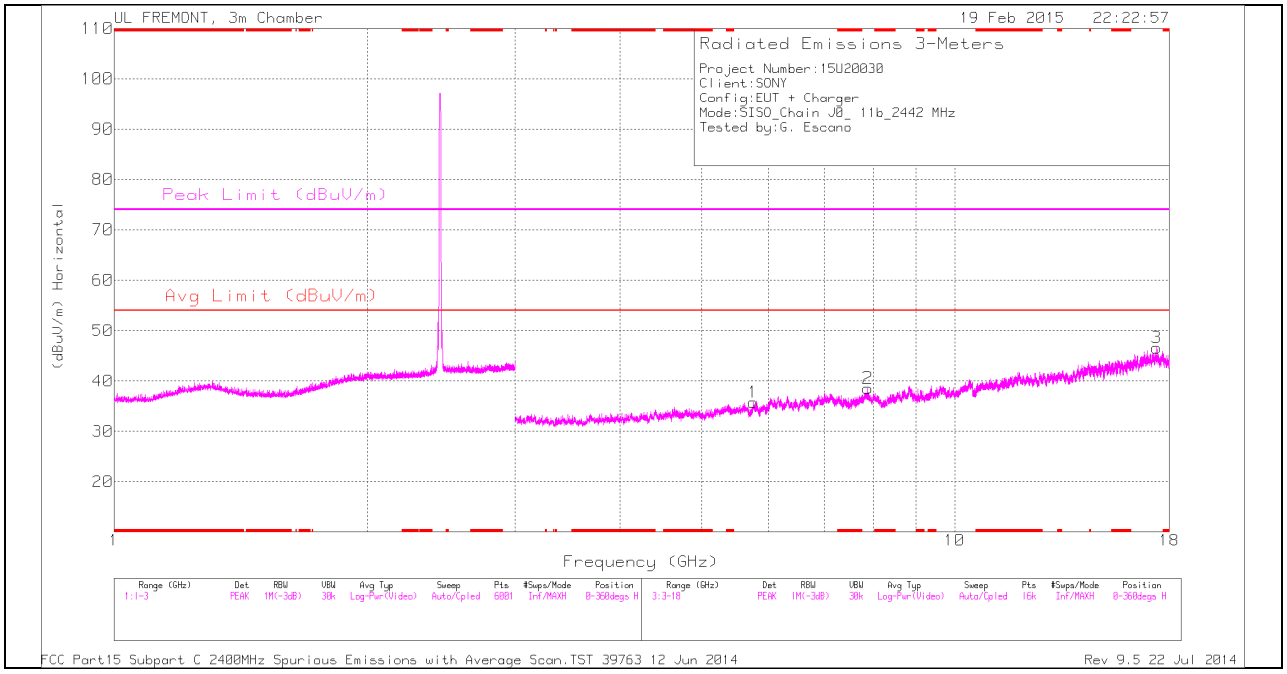
MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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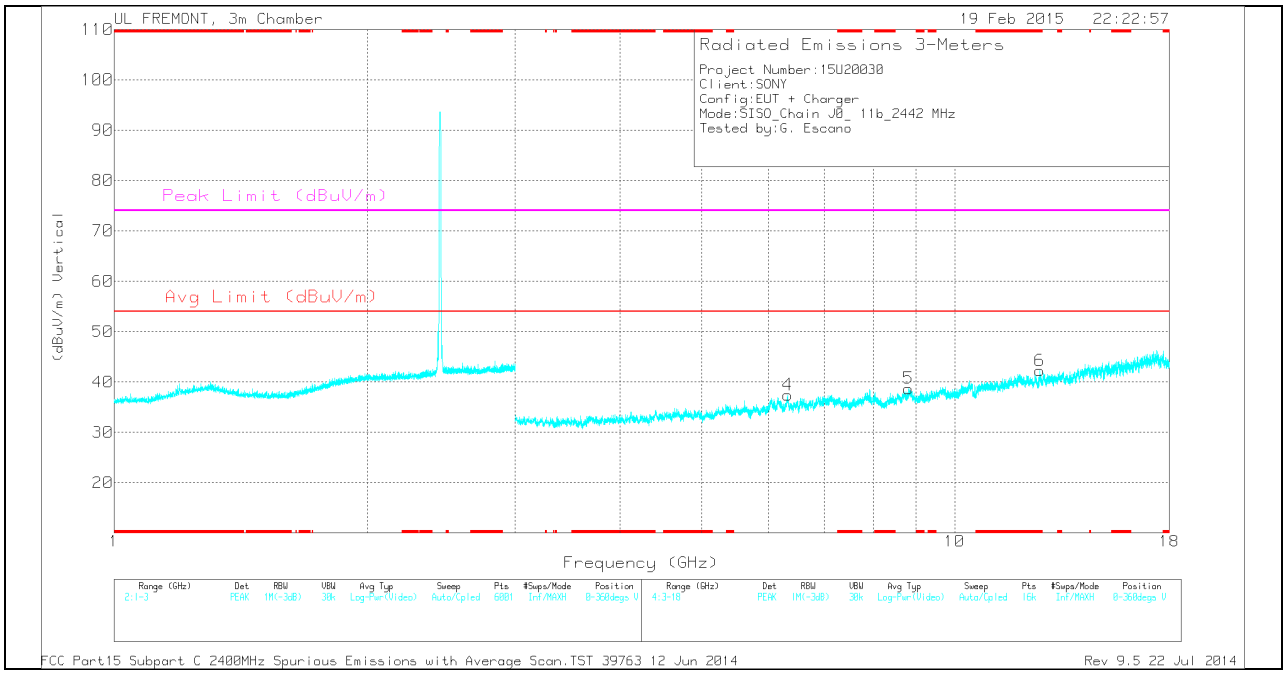
MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 12.632	29.65	PK	39.1	-26.5	0	42.25	-	-	74	-31.75	0-360	100	V
1	5.759	31.47	PK	34.8	-30.5	0	35.77	-	-	-	-	0-360	100	H
4	6.329	31.04	PK	35.4	-29	0	37.44	-	-	-	-	0-360	100	V
2	7.883	30.05	PK	35.8	-27.3	0	38.55	-	-	-	-	0-360	100	H
5	8.812	29.52	PK	35.9	-26.7	0	38.72	-	-	-	-	0-360	200	V
3	17.39	27.7	PK	41.4	-22.5	0	46.6	-	-	-	-	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 12.632	38.73	PK2	39.1	-26.5	0	51.33	-	-	74	-22.67	327	223	V
* 12.632	26.53	MAv1	39.1	-26.5	0	39.13	54	-14.87	-	-	327	223	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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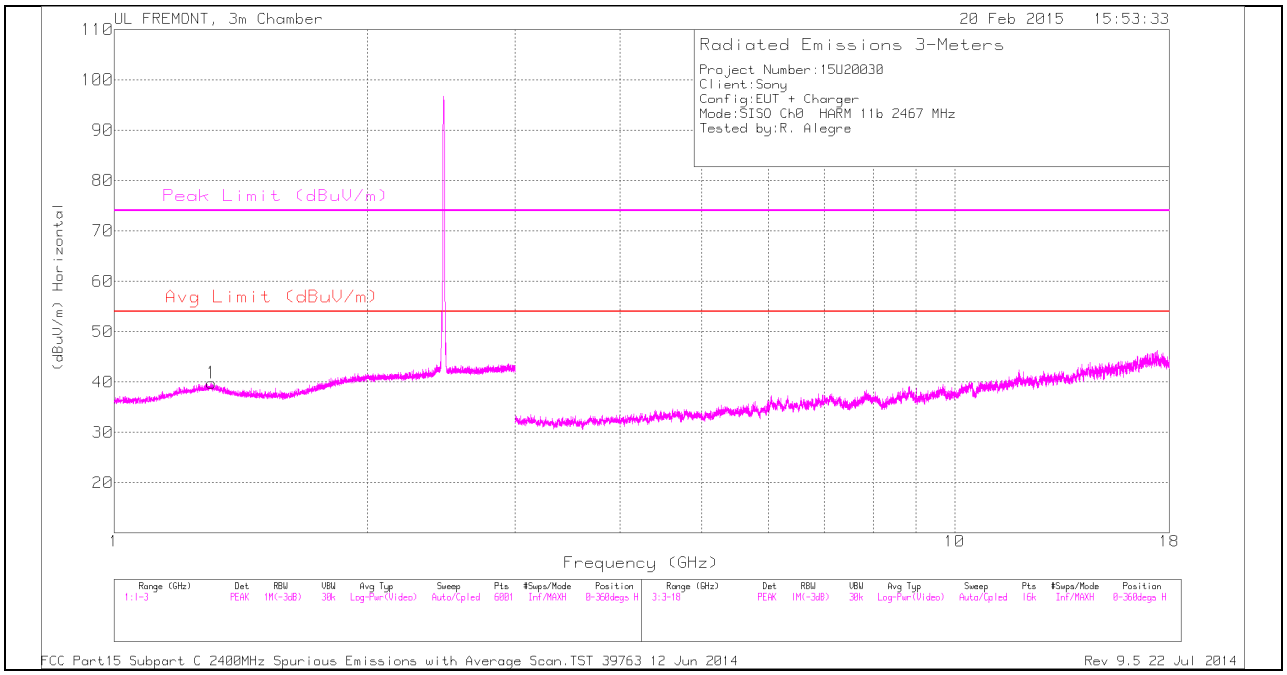
HIGH CHANNEL 12 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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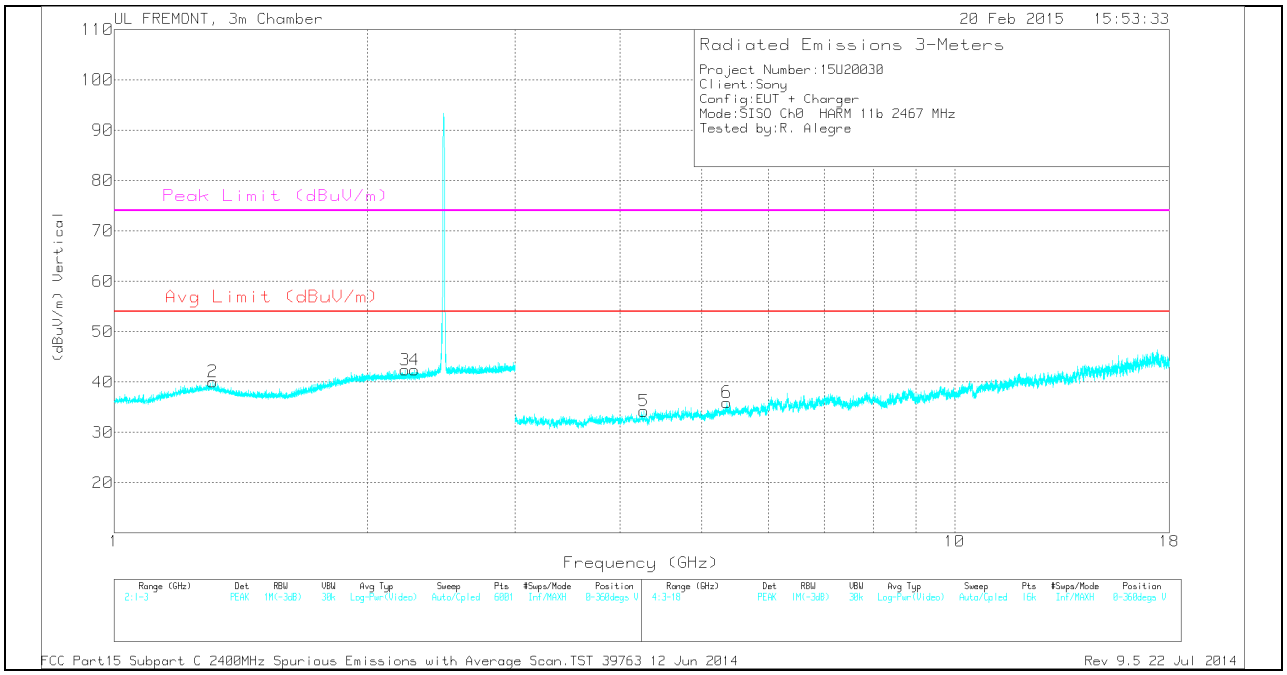
HIGH CHANNEL 12 VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 1.306	33.8	PK	29.8	-23.8	39.8	-	-	74	-34.2	0-360	200	H
2	** 1.311	34.08	PK	29.8	-23.8	40.08	-	-	74	-33.92	0-360	200	V
3	** 2.22	33.89	PK	31.5	-23	42.39	-	-	74	-31.61	0-360	100	V
4	** 2.276	33.89	PK	31.6	-23.1	42.39	-	-	74	-31.61	0-360	100	V
5	** 4.268	32.03	PK	33.4	-31.2	34.23	-	-	74	-39.77	0-360	200	V
6	** 5.354	31.44	PK	34.5	-30	35.94	-	-	74	-38.06	0-360	100	V

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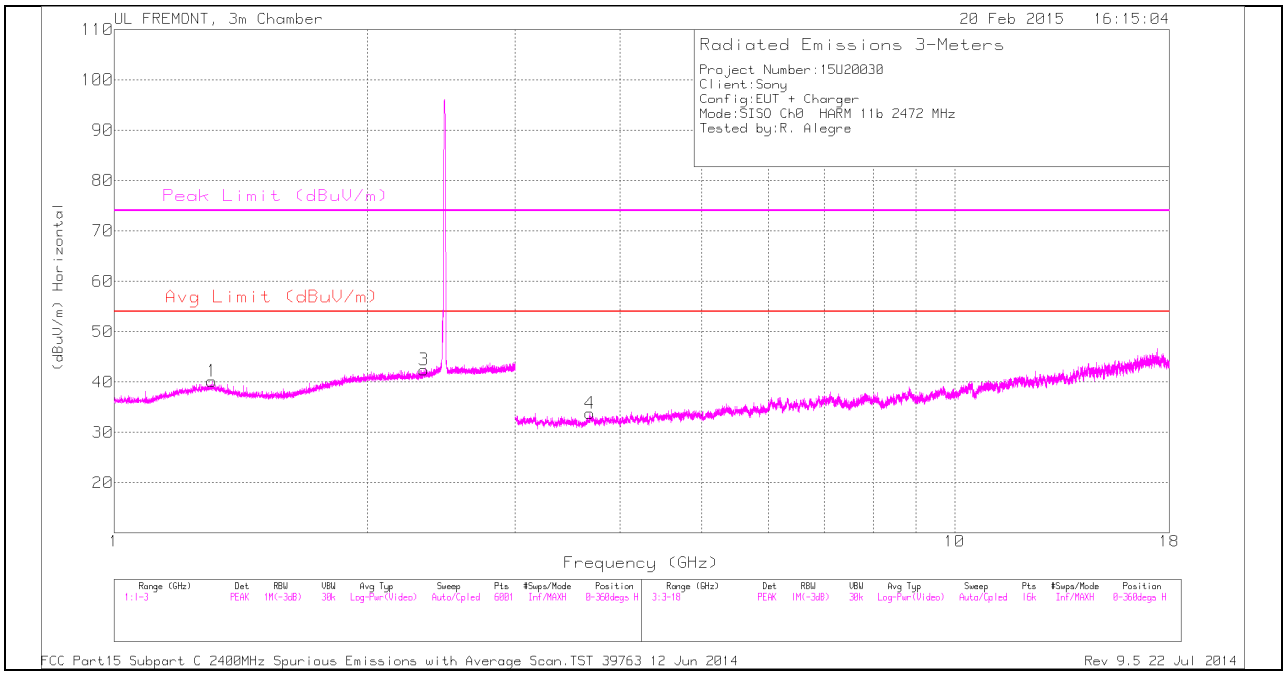
HIGH CHANNEL 13 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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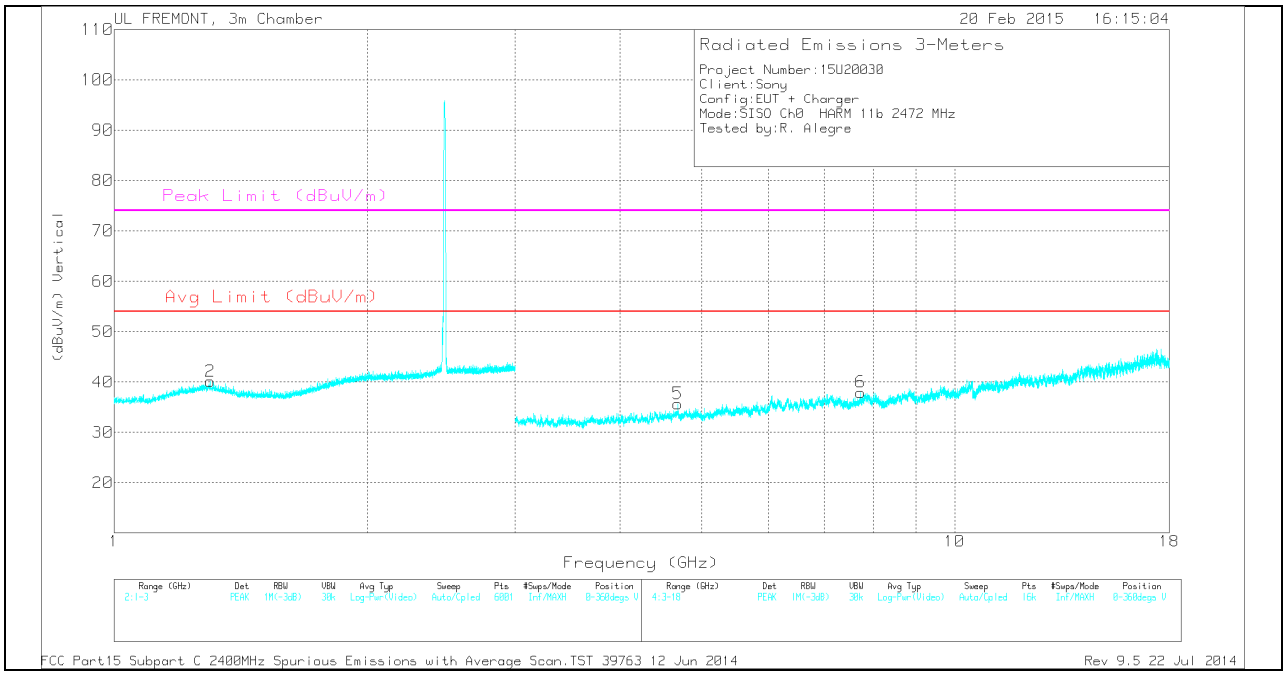
HIGH CHANNEL 13 VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 1.307	34.18	PK	29.8	-23.8	40.18	-	-	74	-33.82	0-360	100	H
3	** 2.336	33.74	PK	31.8	-23.1	42.44	-	-	74	-31.56	0-360	200	H
2	** 1.302	34.04	PK	29.9	-23.8	40.14	-	-	74	-33.86	0-360	200	V
4	** 3.682	31.5	PK	33	-30.7	33.8	-	-	74	-40.2	0-360	100	H
5	** 4.682	32.39	PK	34	-30.7	35.69	-	-	74	-38.31	0-360	100	V
6	** 7.734	31.46	PK	35.8	-29.3	37.96	-	-	74	-36.04	0-360	100	V

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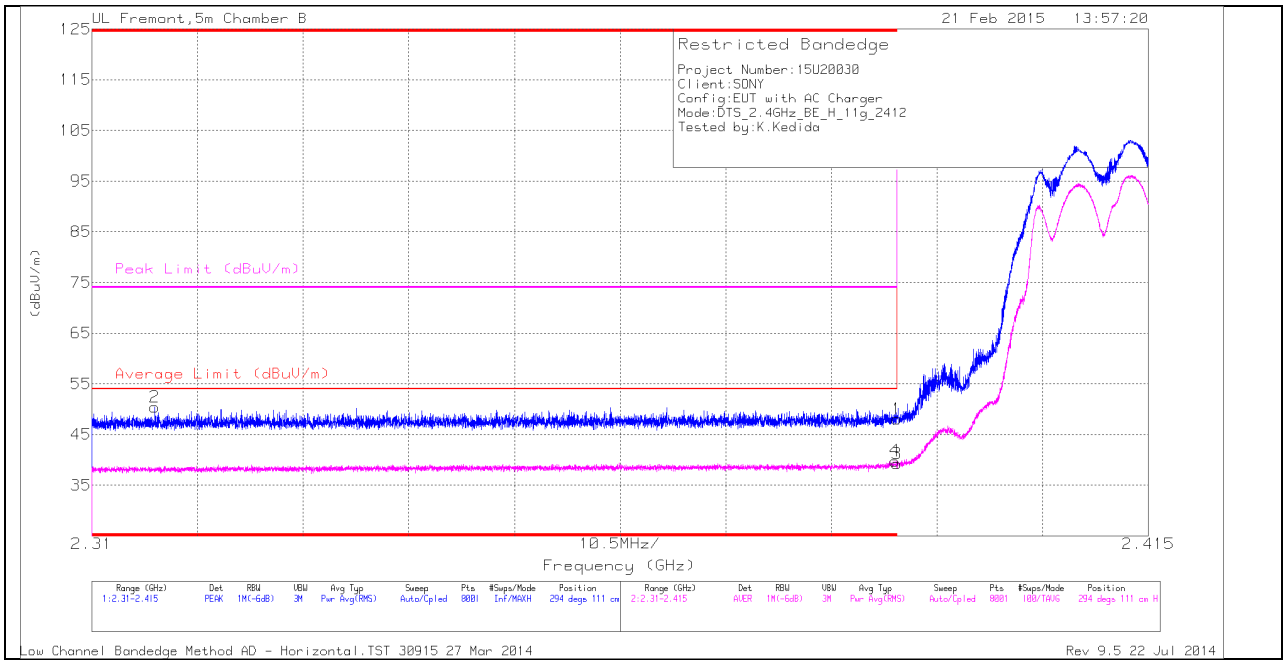
11.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.53	PK	32.1	-22.6	48.03	-	-	74	-25.97	294	111	H
2	* 2.316	41.44	PK	31.7	-22.7	50.44	-	-	74	-23.56	294	111	H
3	* 2.39	29.71	RMS	32.1	-22.6	39.25	54	-14.75	-	-	294	111	H
4	* 2.39	30.26	RMS	32.1	-22.6	39.8	54	-14.2	-	-	294	111	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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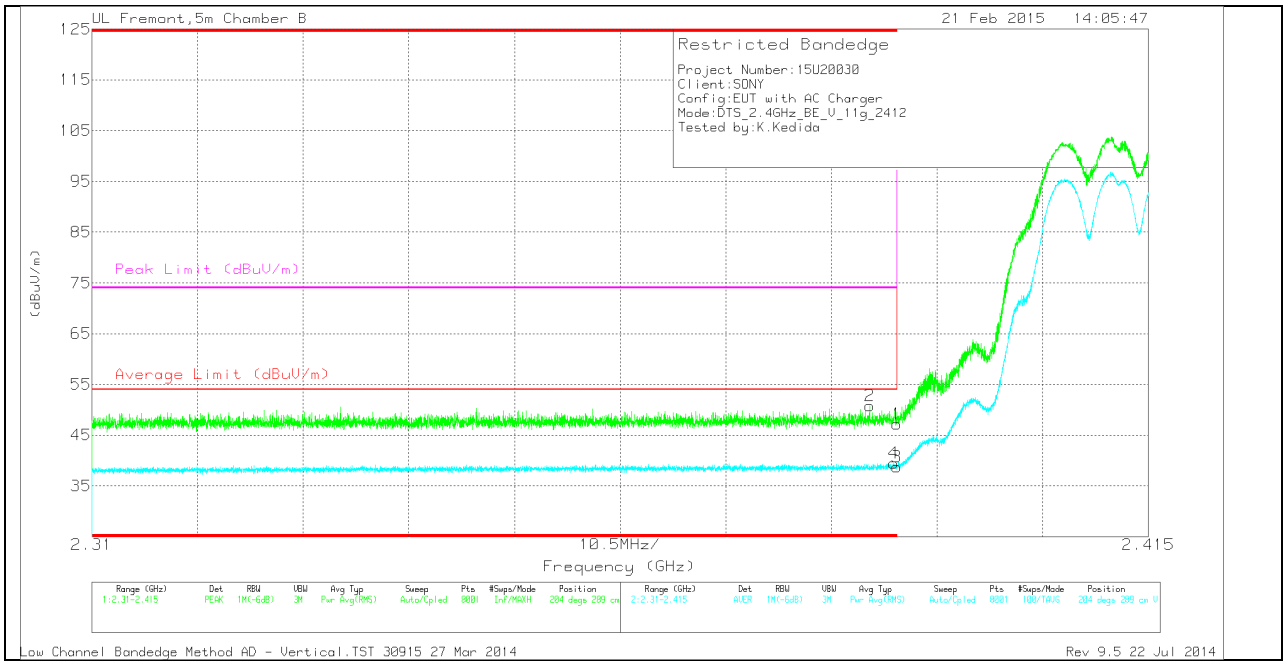
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.65	PK	32.1	-22.6	47.15	-	-	74	-26.85	204	289	V
2	* 2.387	41.33	PK	32.1	-22.6	50.83	-	-	74	-23.17	204	289	V
3	* 2.39	29.18	RMS	32.1	-22.6	38.72	54	-15.28	-	-	204	289	V
4	* 2.39	29.95	RMS	32.1	-22.6	39.49	54	-14.51	-	-	204	289	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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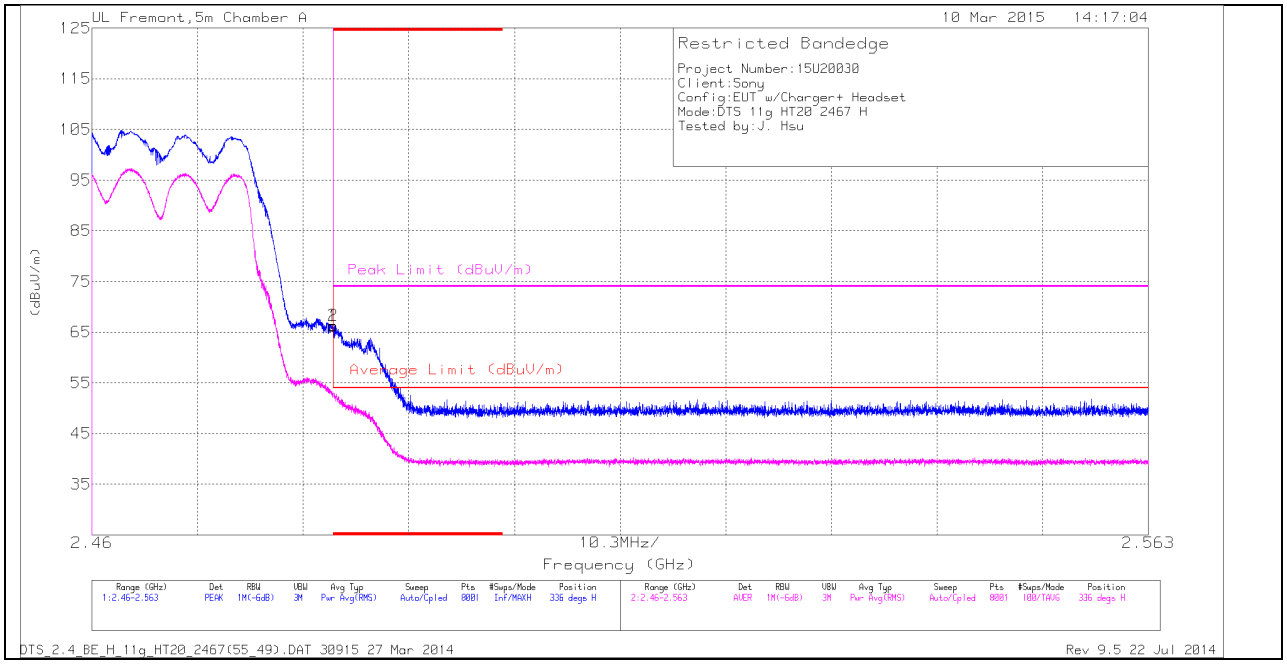
AUTHORIZED BANDEDGE (HIGH CHANNEL 12)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	55.97	PK	32.1	-21.9	66.17	-	-	74	-7.83	336	108	H
2	* 2.484	56.15	PK	32.1	-21.9	66.35	-	-	74	-7.65	336	108	H
3	* 2.484	42.55	RMS	32.1	-21.9	52.79	54	-1.21	-	-	336	108	H
4	* 2.484	42.82	RMS	32.1	-21.9	53.06	54	-.94	-	-	336	108	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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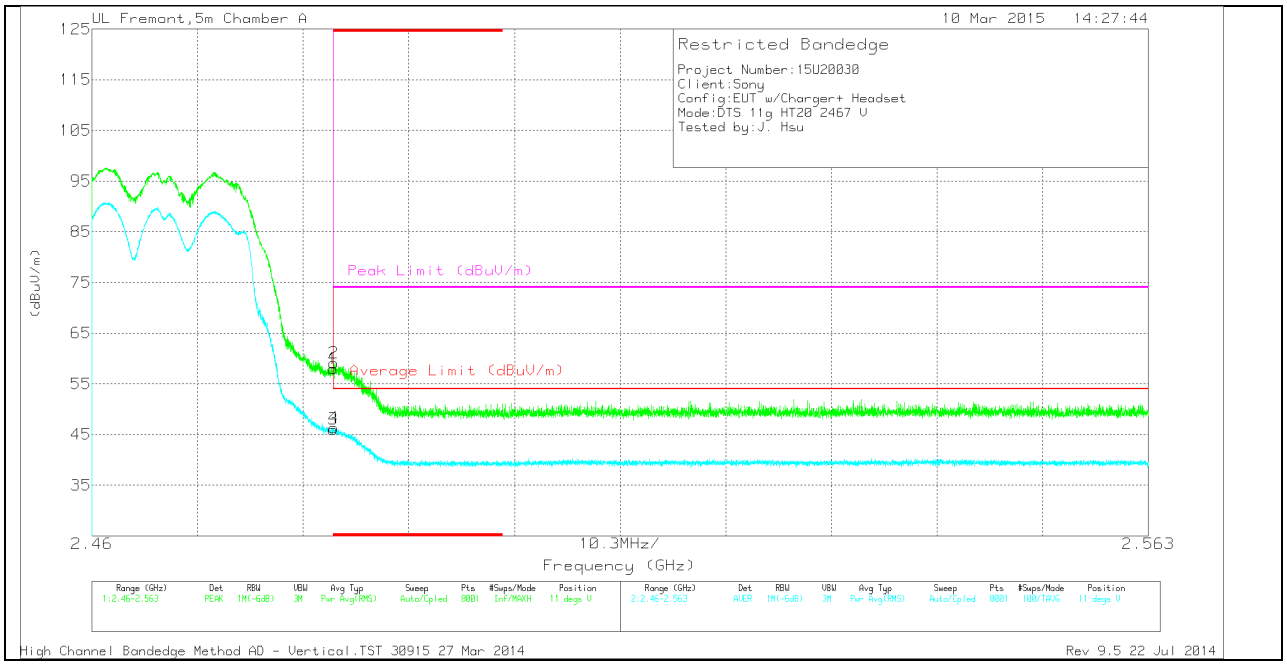
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.75	PK	32.1	-21.9	57.95	-	-	74	-16.05	11	355	V
2	* 2.484	48.92	PK	32.1	-21.9	59.12	-	-	74	-14.88	11	355	V
3	* 2.484	35.77	RMS	32.1	-21.9	46.01	54	-7.99	-	-	11	355	V
4	* 2.484	36.08	RMS	32.1	-21.9	46.32	54	-7.68	-	-	11	355	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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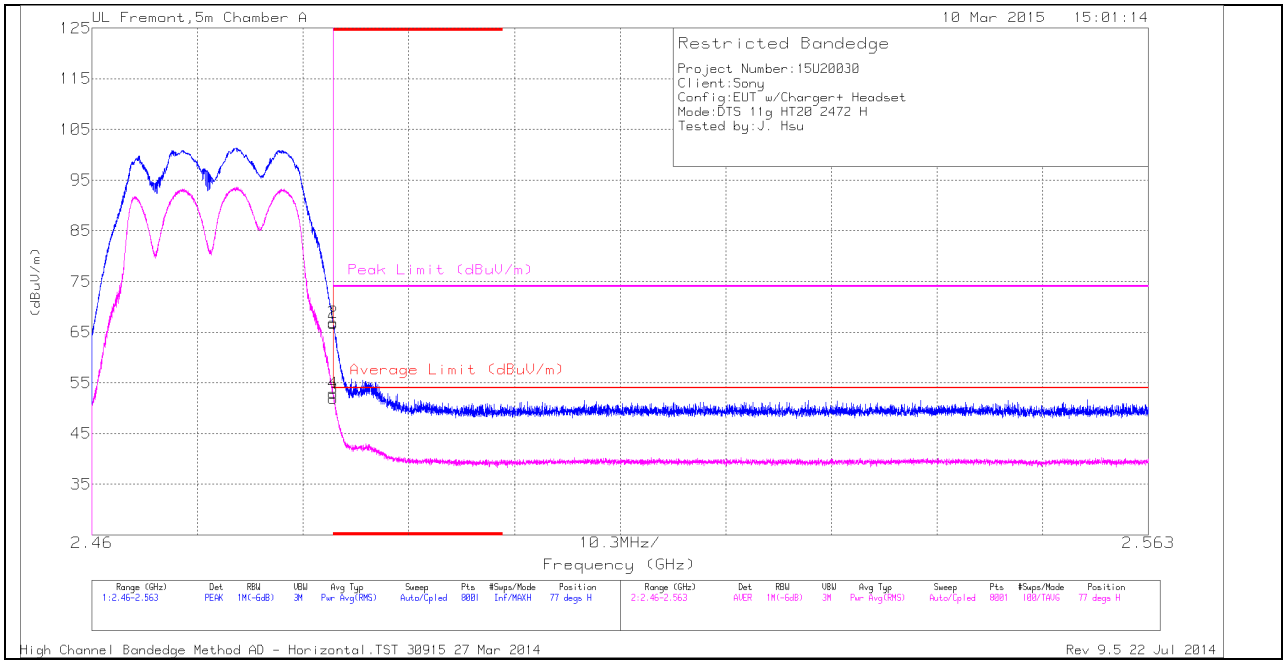
AUTHORIZED BANDEDGE (HIGH CHANNEL 13)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.45	PK	32.1	-21.9	66.65	-	-	74	-7.35	77	352	H
2	* 2.484	56.7	PK	32.1	-21.9	66.9	-	-	74	-7.1	77	352	H
3	* 2.484	41.71	RMS	32.1	-21.9	51.95	54	-2.05	-	-	77	352	H
4	* 2.484	42.65	RMS	32.1	-21.9	52.89	54	-1.11	-	-	77	352	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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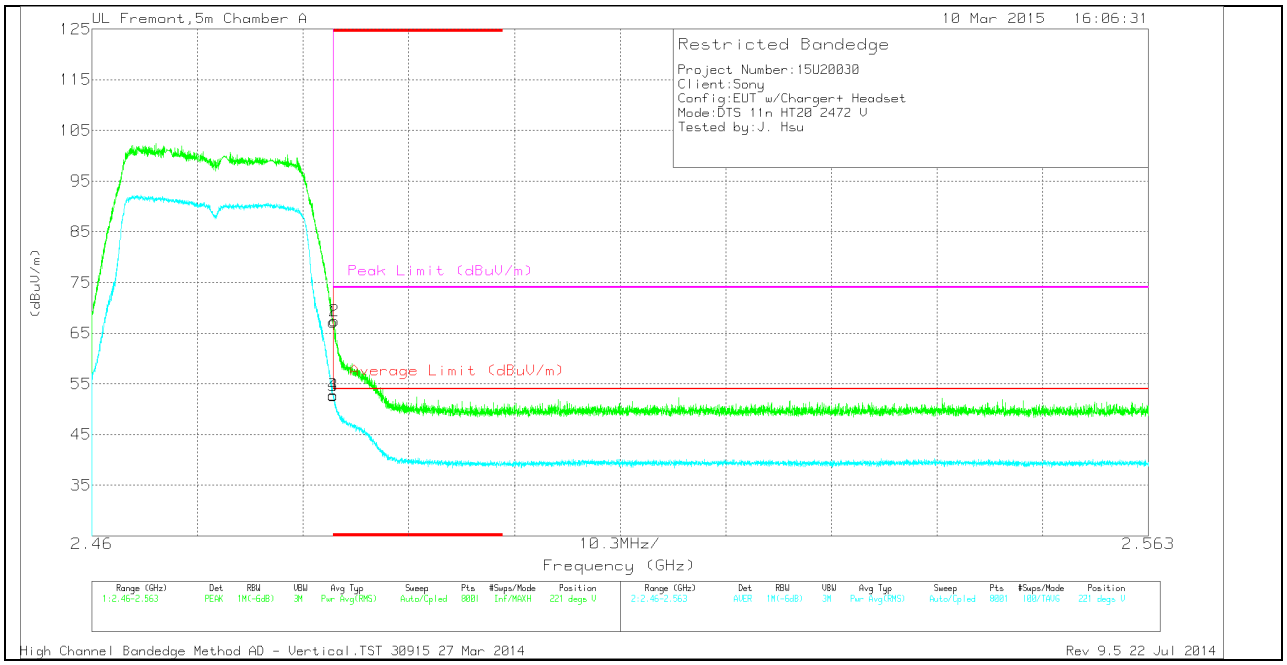
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.98	PK	32.1	-21.9	67.18	-	-	74	-6.82	221	287	V
2	* 2.484	57.24	PK	32.1	-21.9	67.44	-	-	74	-6.56	221	287	V
3	* 2.484	42.51	RMS	32.1	-21.9	52.71	54	-1.29	-	-	221	287	V
4	* 2.484	42.52	RMS	32.1	-21.9	52.72	54	-1.28	-	-	221	287	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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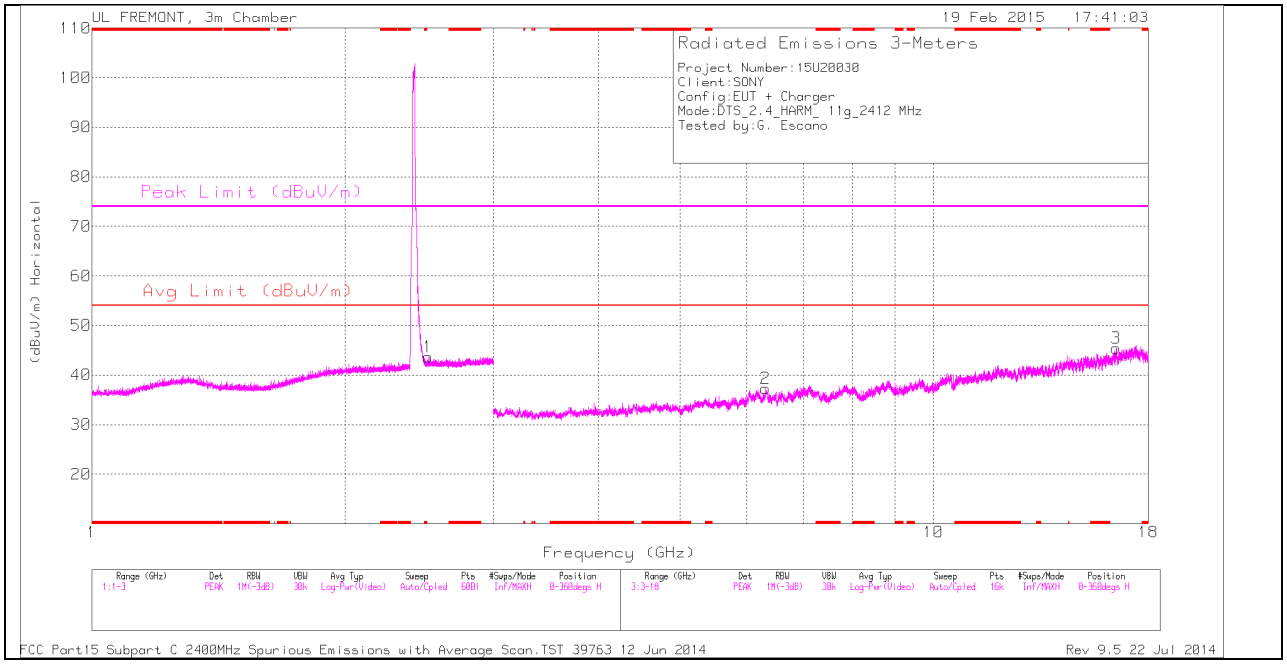
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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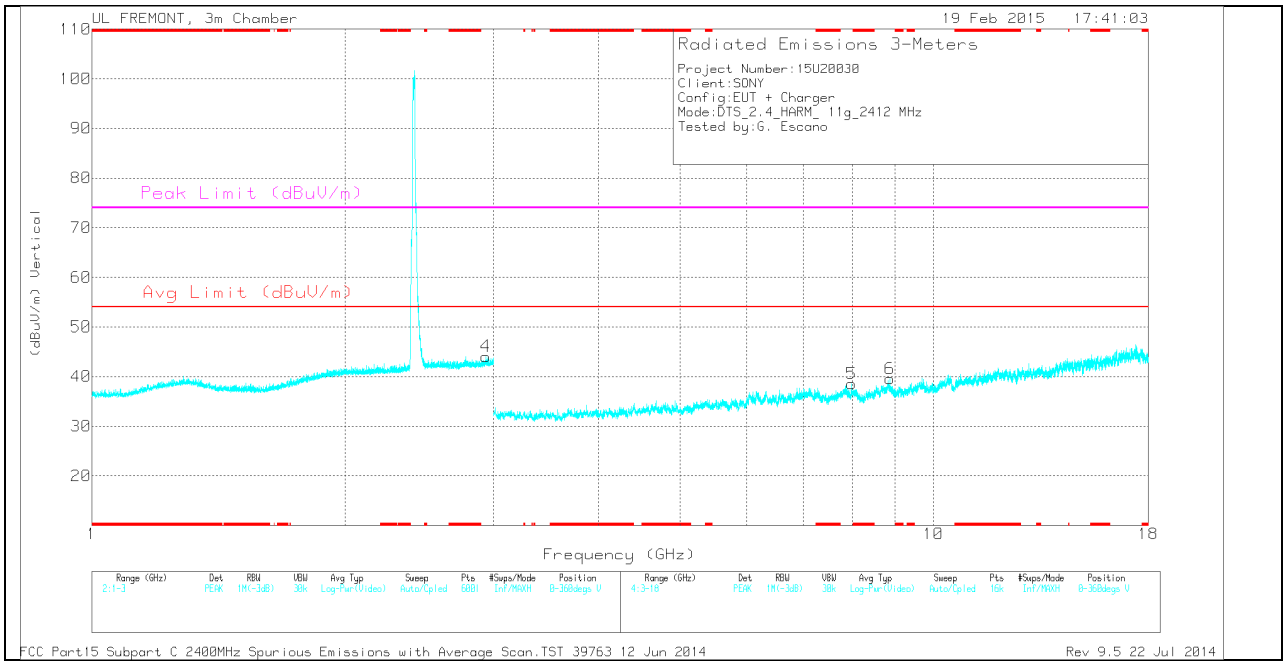
LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.508	34.11	PK	32.3	-22.8	0	43.61	-	-	-	-	0-360	100	H
4	2.939	34.19	PK	32.6	-22.7	0	44.09	-	-	-	-	0-360	200	V
2	6.315	31.4	PK	35.4	-29.5	0	37.3	-	-	-	-	0-360	200	H
5	7.997	31.26	PK	35.8	-28.5	0	38.56	-	-	-	-	0-360	100	V
6	8.878	30.13	PK	35.9	-26.4	0	39.63	-	-	-	-	0-360	100	V
3	16.494	28.47	PK	40.9	-23.9	0	45.47	-	-	-	-	0-360	200	H

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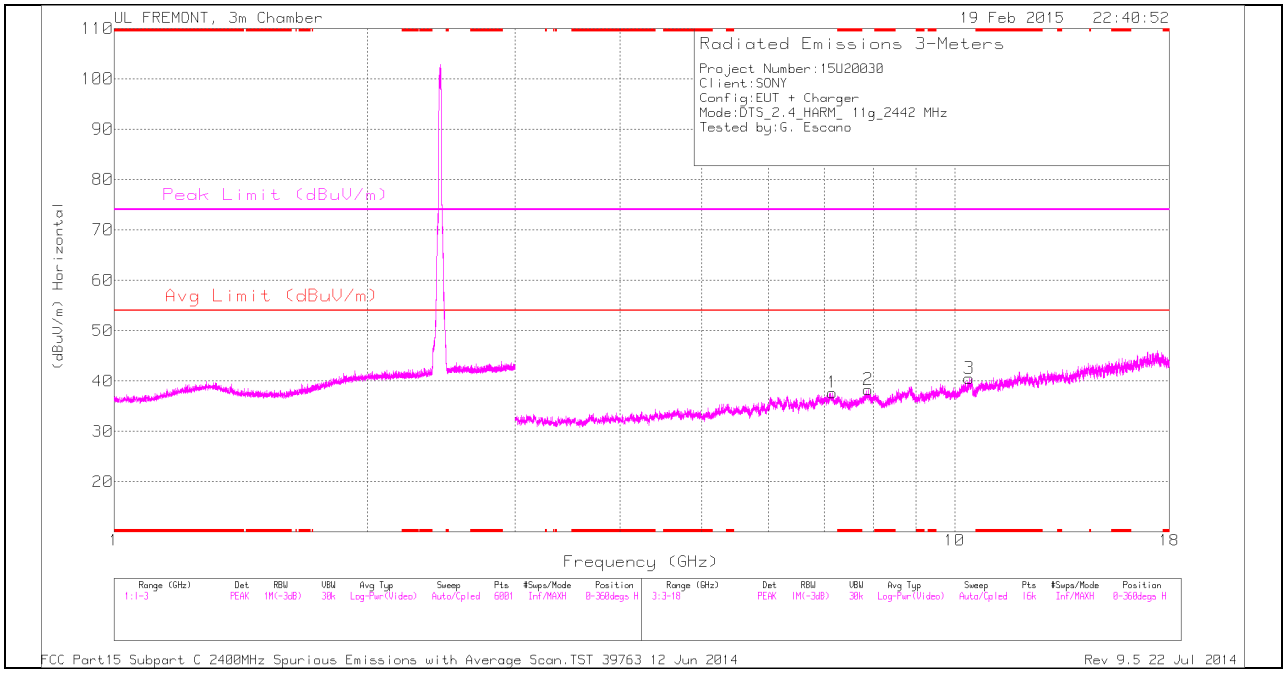
MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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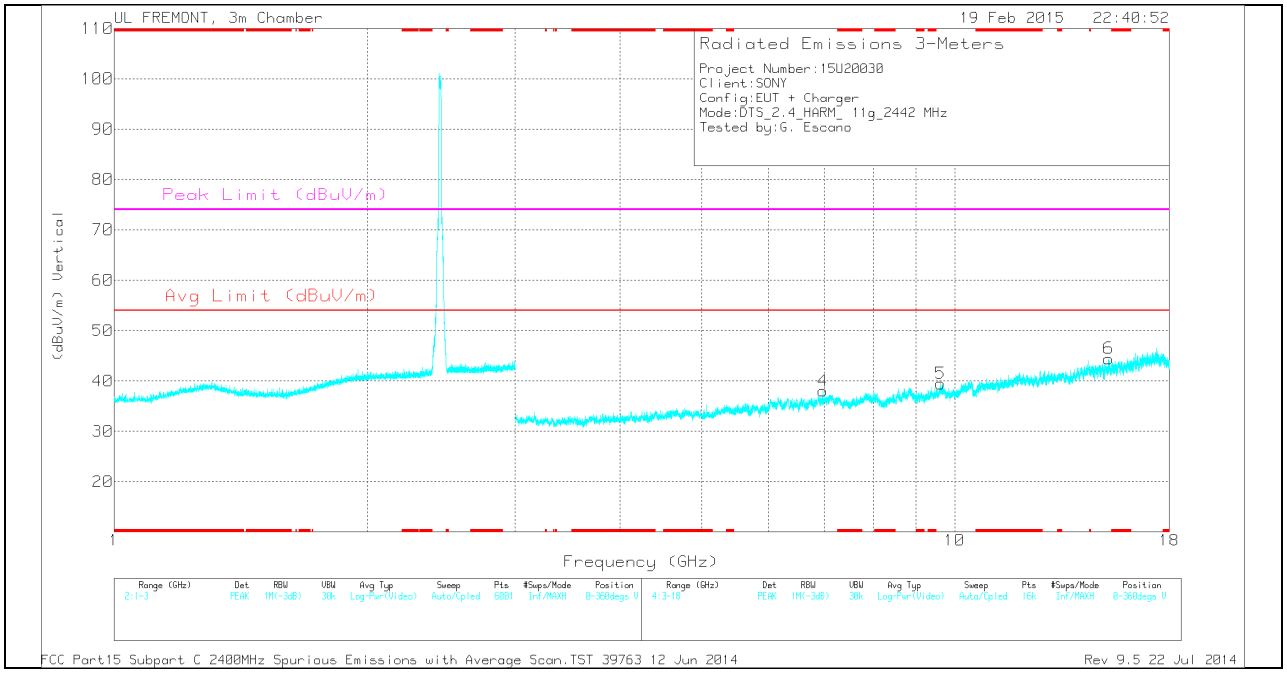
MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	6.974	31.81	PK	35.6	-29.4	0	38.01	-	-	-	-	0-360	100	V
1	7.151	30.22	PK	35.6	-28.1	0	37.72	-	-	-	-	0-360	100	H
2	7.886	29.83	PK	35.8	-27.3	0	38.33	-	-	-	-	0-360	100	H
5	9.621	27.99	PK	36.7	-25.2	0	39.49	-	-	-	-	0-360	100	V
3	10.403	28.47	PK	37.3	-25.2	0	40.57	-	-	-	-	0-360	200	H
6	15.245	30.86	PK	39.9	-26.3	0	44.46	-	-	-	-	0-360	200	V

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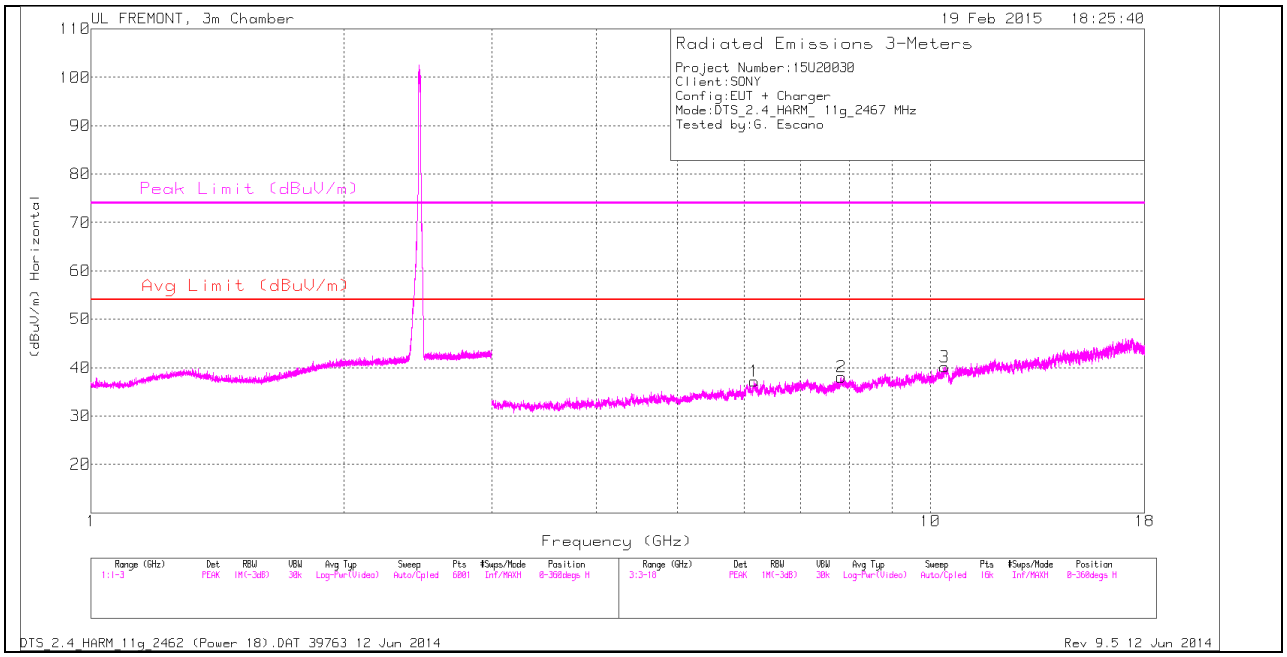
HIGH CHANNEL 12 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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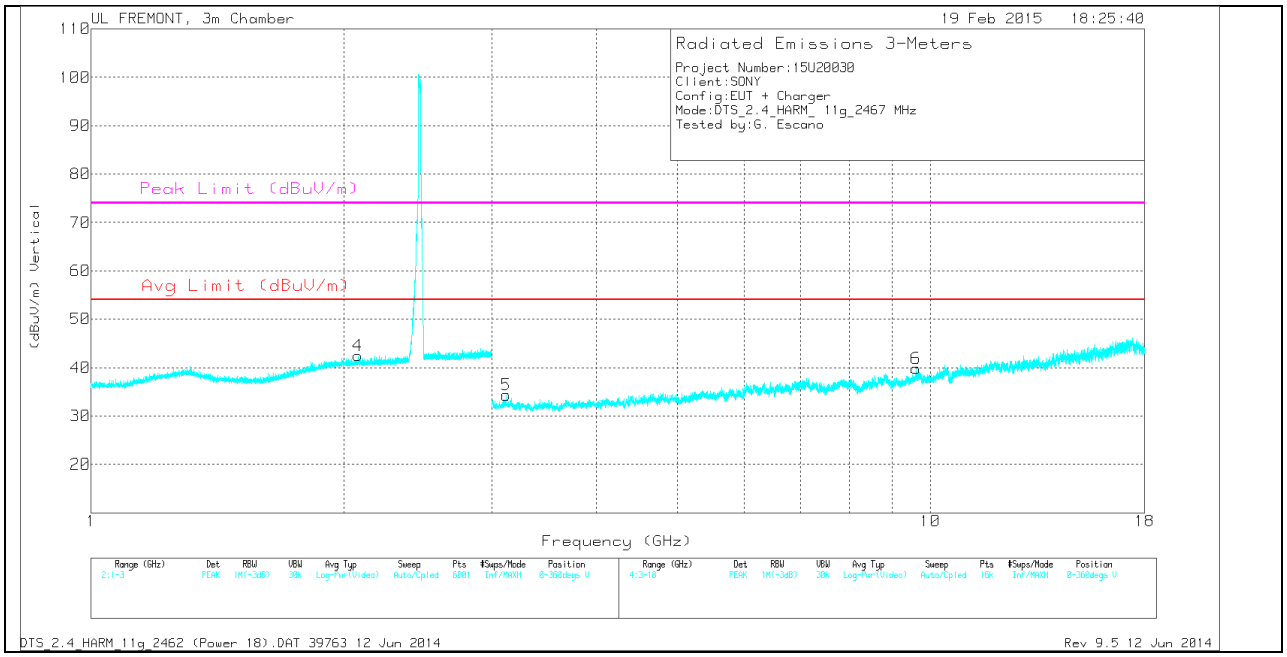
HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.08	33.99	PK	31.5	-23	0	42.49	-	-	-	-	0-360	200	V
5	3.124	33.04	PK	32.7	-31.4	0	34.34	-	-	-	-	0-360	200	V
1	6.168	31.58	PK	35.3	-29.7	0	37.18	-	-	-	-	0-360	100	H
2	7.831	29.98	PK	35.8	-27.7	0	38.08	-	-	-	-	0-360	200	H
6	9.618	28.32	PK	36.7	-25.2	0	39.82	-	-	-	-	0-360	100	V
3	10.399	28.12	PK	37.3	-25.3	0	40.12	-	-	-	-	0-360	100	H

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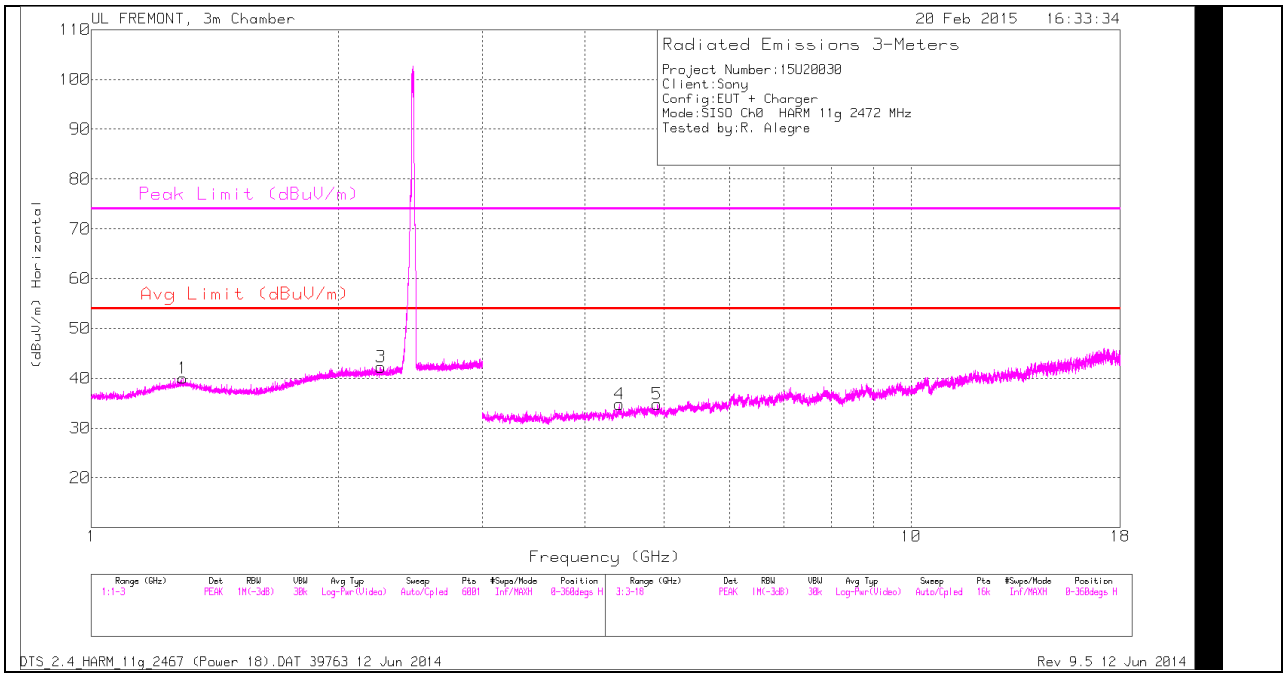
HIGH CHANNEL 13 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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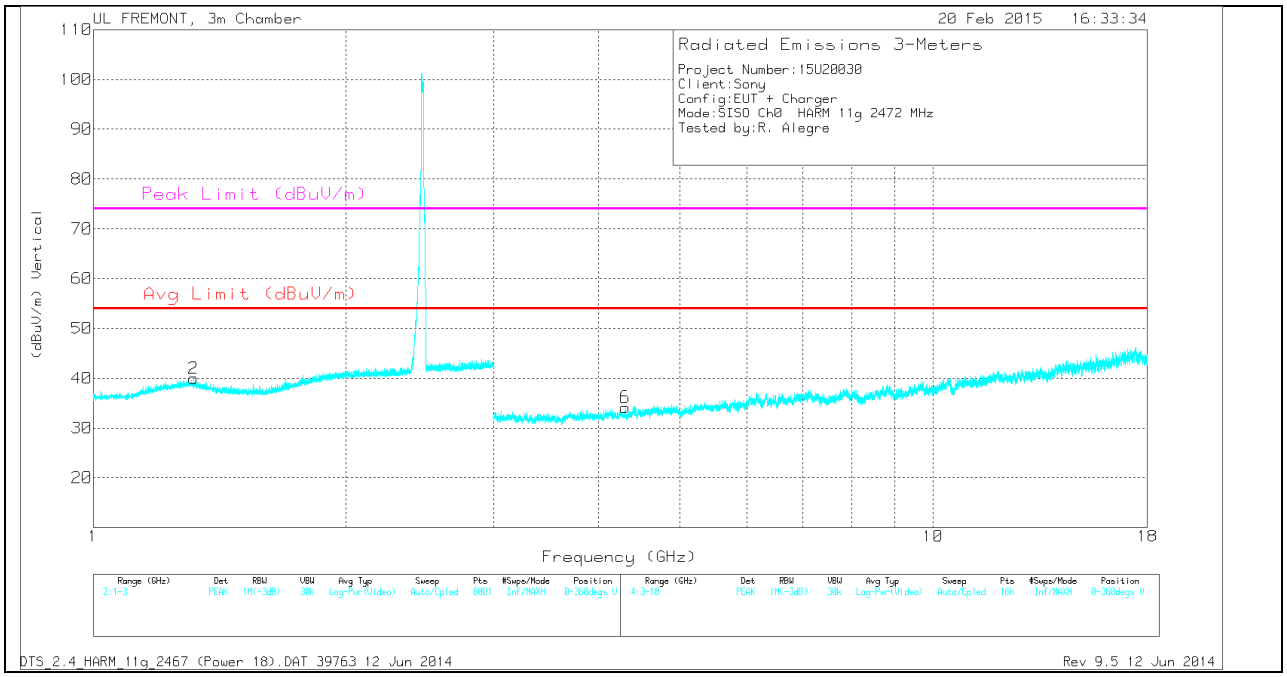
HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.293	34.02	PK	29.8	-23.8	0	40.02	-	-	74	-33.98	0-360	100	H
2	1.318	34.05	PK	29.7	-23.8	0	39.95	-	-	74	-34.05	0-360	100	V
3	2.255	33.68	PK	31.5	-22.9	0	42.28	-	-	74	-31.72	0-360	100	H
6	4.301	31.54	PK	33.5	-30.9	0	34.14	-	-	74	-39.86	0-360	100	V
4	4.408	31.28	PK	33.7	-30.2	0	34.78	-	-	-	-	0-360	200	H
5	4.902	30.79	PK	34	-30	0	34.79	-	-	74	-39.21	0-360	200	H

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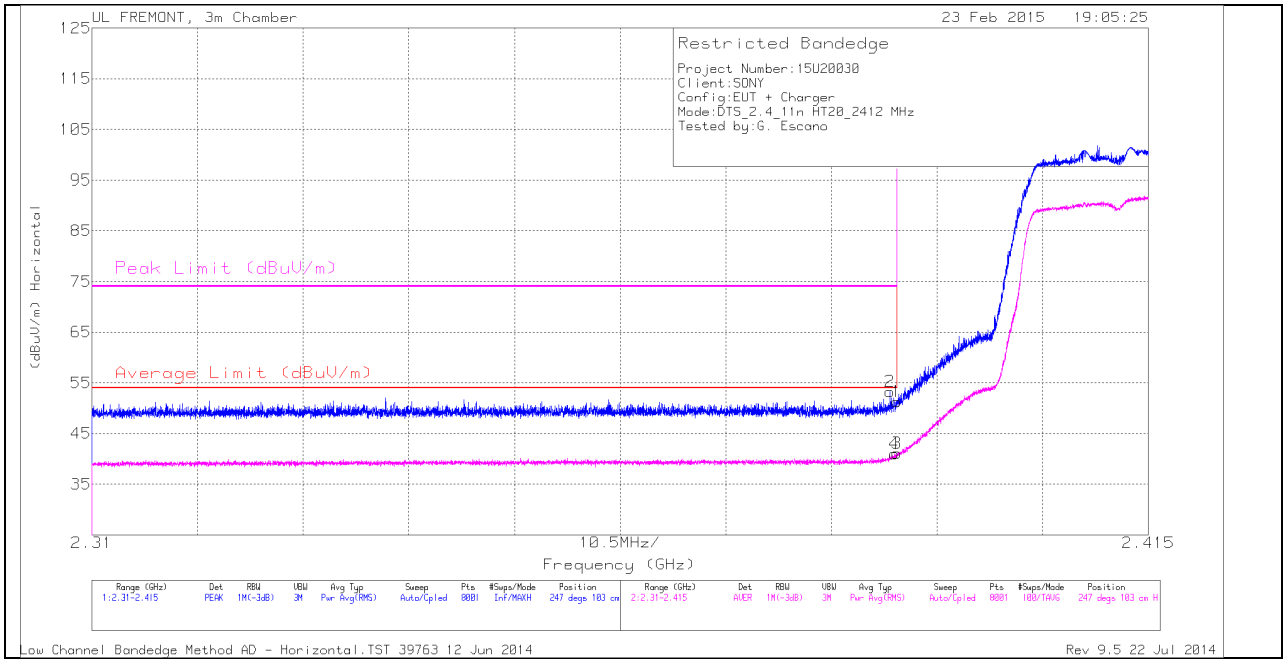
11.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.389	44.37	PK	32	-23.1	0	53.27	-	-	74	-20.73	247	103	H
1	2.39	42.42	PK	32	-23.1	0	51.32	-	-	74	-22.68	247	103	H
3	2.39	32.16	RMS	32	-23.1	0	41.06	54	-12.94	-	-	247	103	H
4	2.39	32.08	RMS	32	-23.1	0	40.98	54	-13.02	-	-	247	103	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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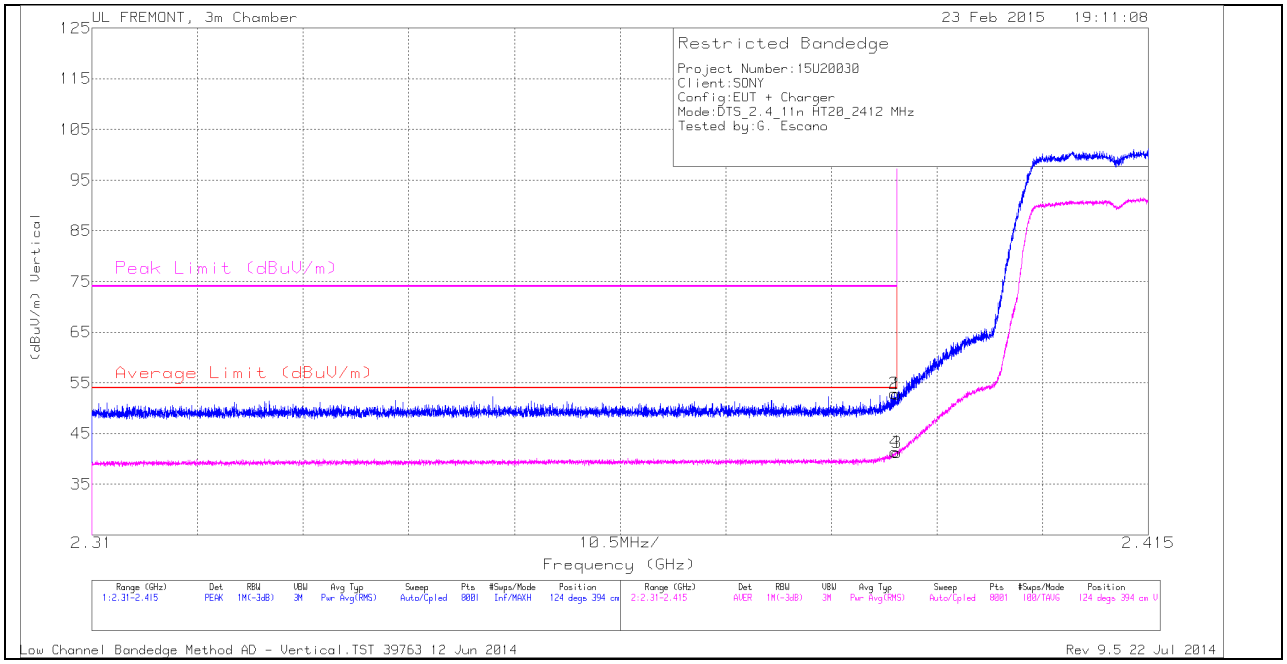
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	43.91	PK	32	-23.1	0	52.81	-	-	74	-21.19	124	394	V
2	2.39	44.02	PK	32	-23.1	0	52.92	-	-	74	-21.08	124	394	V
3	2.39	32.29	RMS	32	-23.1	0	41.19	54	-12.81	-	-	124	394	V
4	2.39	32.44	RMS	32	-23.1	0	41.34	54	-12.66	-	-	124	394	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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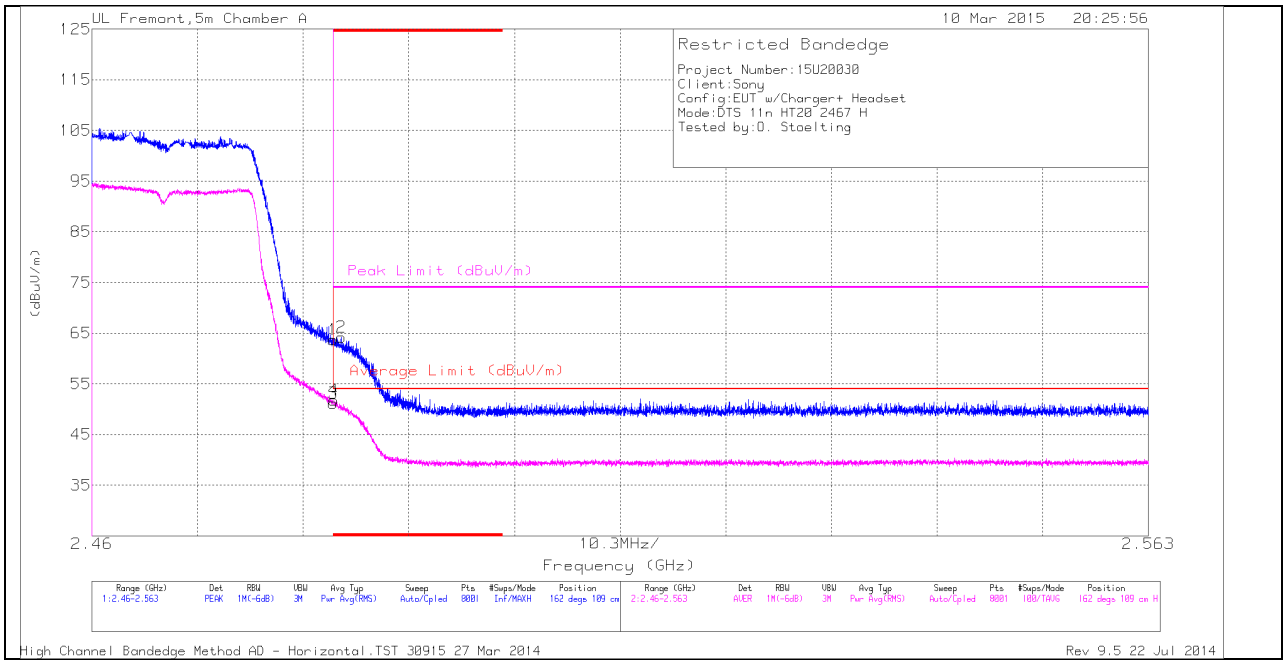
AUTHORIZED BANDEDGE (HIGH CHANNEL 12)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	53.45	PK	32.1	-21.9	63.65	-	-	74	-10.35	162	109	H
2	* 2.484	53.98	PK	32.1	-21.9	64.18	-	-	74	-9.82	162	109	H
3	* 2.484	40.97	RMS	32.1	-21.9	51.17	54	-2.83	-	-	162	109	H
4	* 2.484	41.63	RMS	32.1	-21.9	51.83	54	-2.17	-	-	162	109	H

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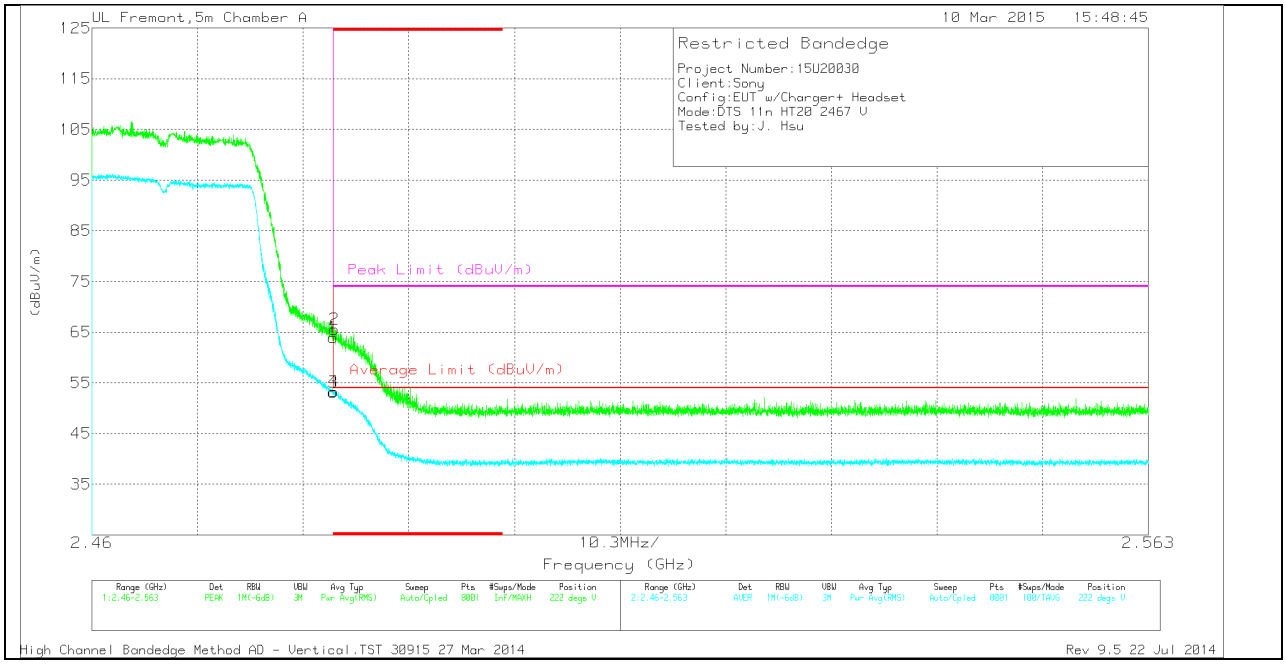
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	53.7	PK	32.1	-21.9	63.9	-	-	74	-10.1	222	285	V
2	* 2.484	55.4	PK	32.1	-21.9	65.6	-	-	74	-8.4	222	285	V
3	* 2.484	42.99	RMS	32.1	-21.9	53.19	54	-.81	-	-	222	285	V
4	* 2.484	43.08	RMS	32.1	-21.9	53.28	54	-.72	-	-	222	285	V

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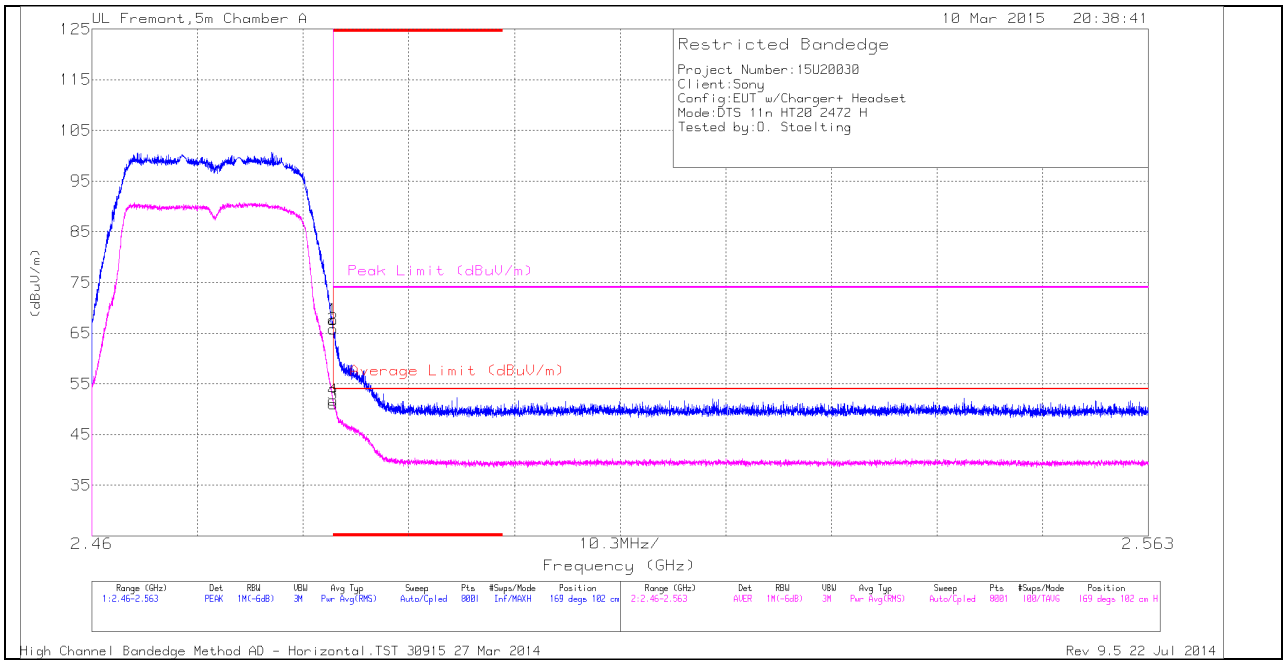
AUTHORIZED BANDEDGE (HIGH CHANNEL 13)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	57.43	PK	32.1	-21.9	67.63	-	-	74	-6.37	169	102	H
2	* 2.484	55.58	PK	32.1	-21.9	65.78	-	-	74	-8.22	169	102	H
3	* 2.484	40.79	RMS	32.1	-21.9	50.99	54	-3.01	-	-	169	102	H
4	* 2.484	41.56	RMS	32.1	-21.9	51.76	54	-2.24	-	-	169	102	H

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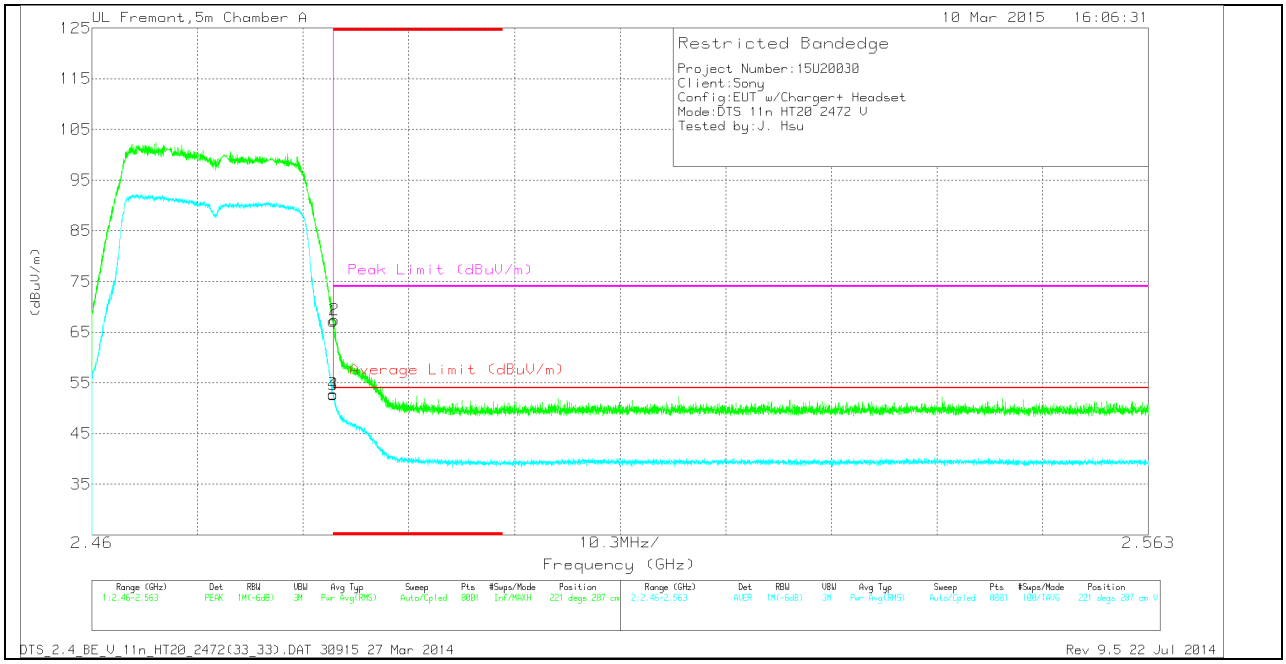
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.98	PK	32.1	-21.9	67.18	-	-	74	-6.82	221	287	V
2	* 2.484	57.24	PK	32.1	-21.9	67.44	-	-	74	-6.56	221	287	V
3	* 2.484	42.51	RMS	32.1	-21.9	52.71	54	-1.29	-	-	221	287	V
4	* 2.484	42.52	RMS	32.1	-21.9	52.72	54	-1.28	-	-	221	287	V

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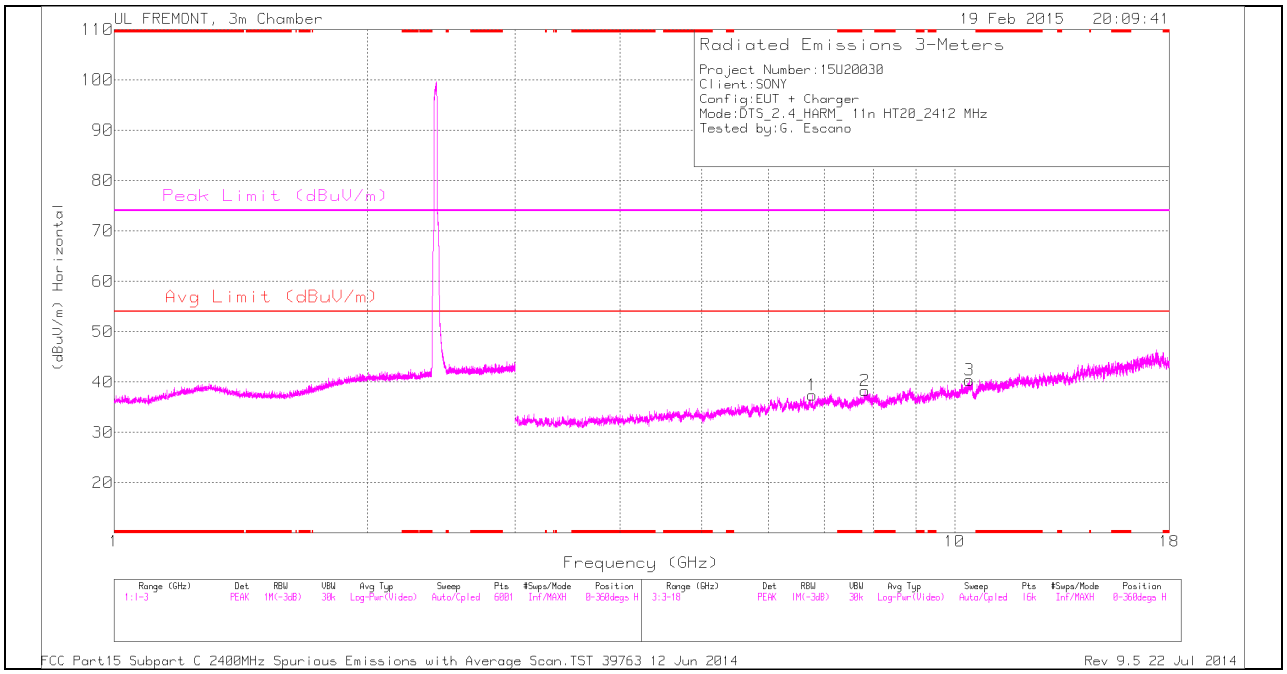
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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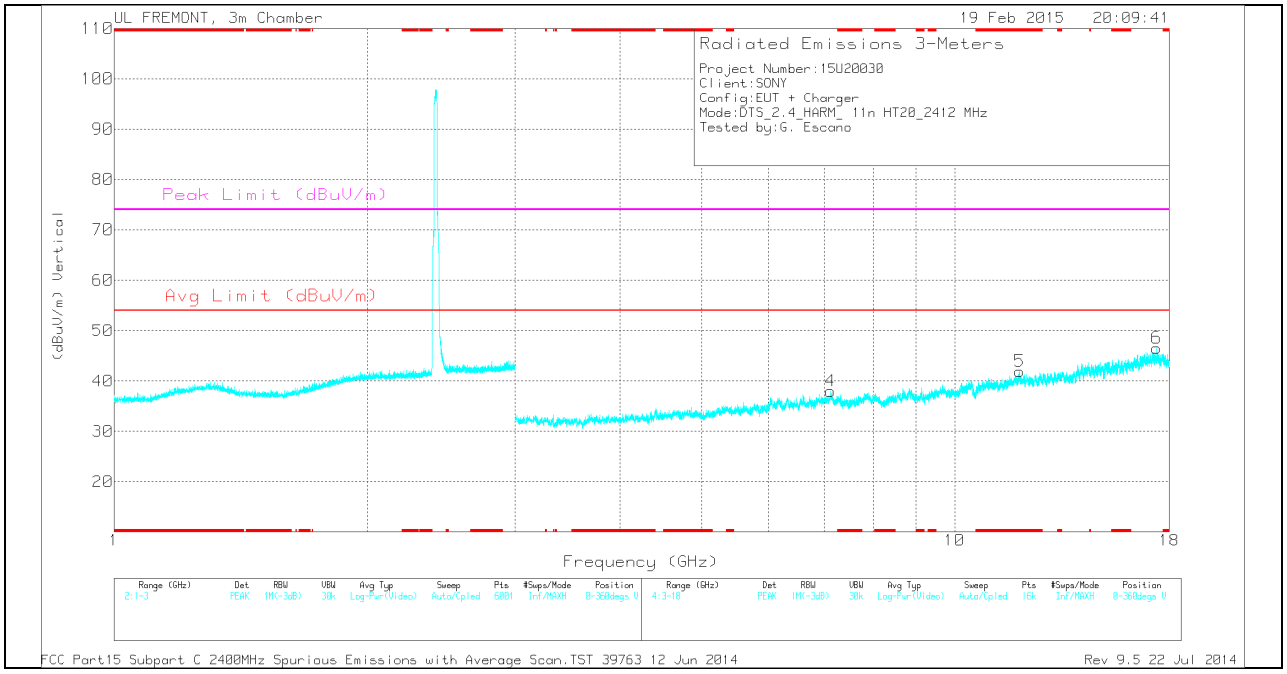
LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 11.946	28.93	PK	39.1	-26.1	0	41.93	-	-	74	-32.07	0-360	200	V
1	6.774	31.31	PK	35.6	-29.5	0	37.41	-	-	-	-	0-360	200	H
4	7.115	30.48	PK	35.6	-28.1	0	37.98	-	-	-	-	0-360	100	V
2	7.827	30.29	PK	35.8	-27.8	0	38.29	-	-	-	-	0-360	200	H
3	10.407	28.06	PK	37.3	-25	0	40.36	-	-	-	-	0-360	200	H
6	17.387	27.96	PK	41.4	-22.8	0	46.56	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.946	38.53	PK2	39.1	-26.1	51.53	-	-	74	-22.47	343	197	V
* 11.946	25.88	MAv1	39.1	-26.1	38.95	54	-15.05	-	-	343	197	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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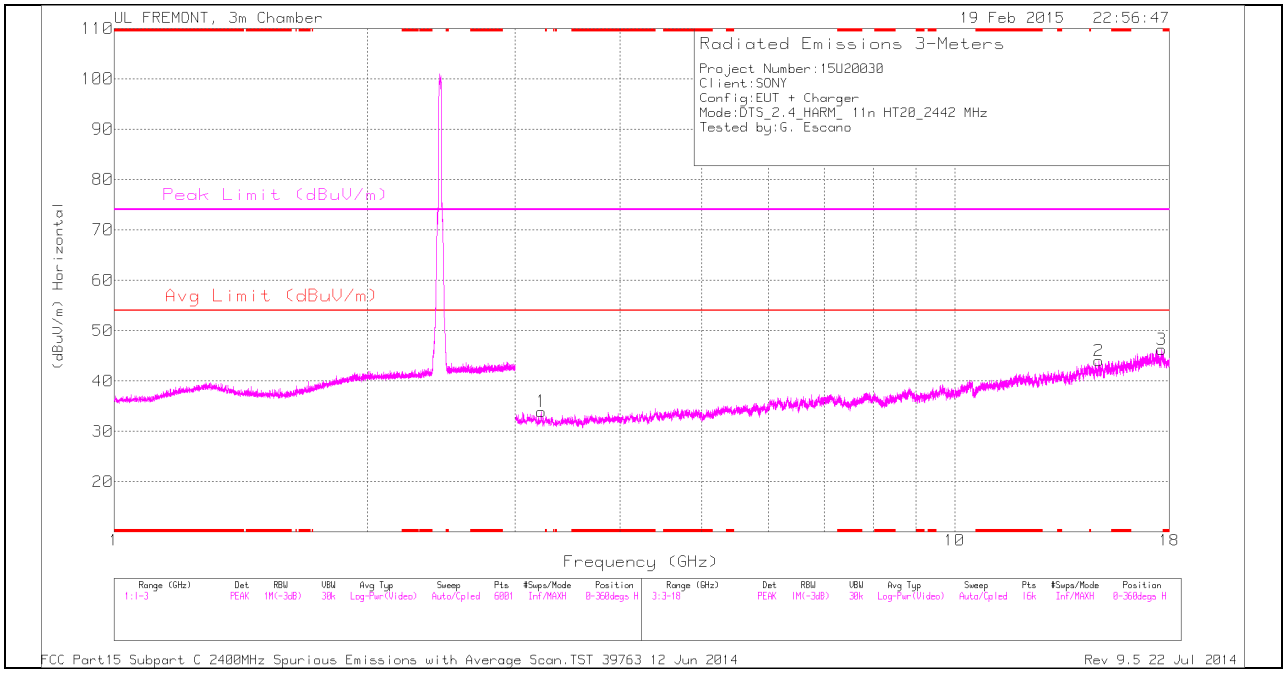
MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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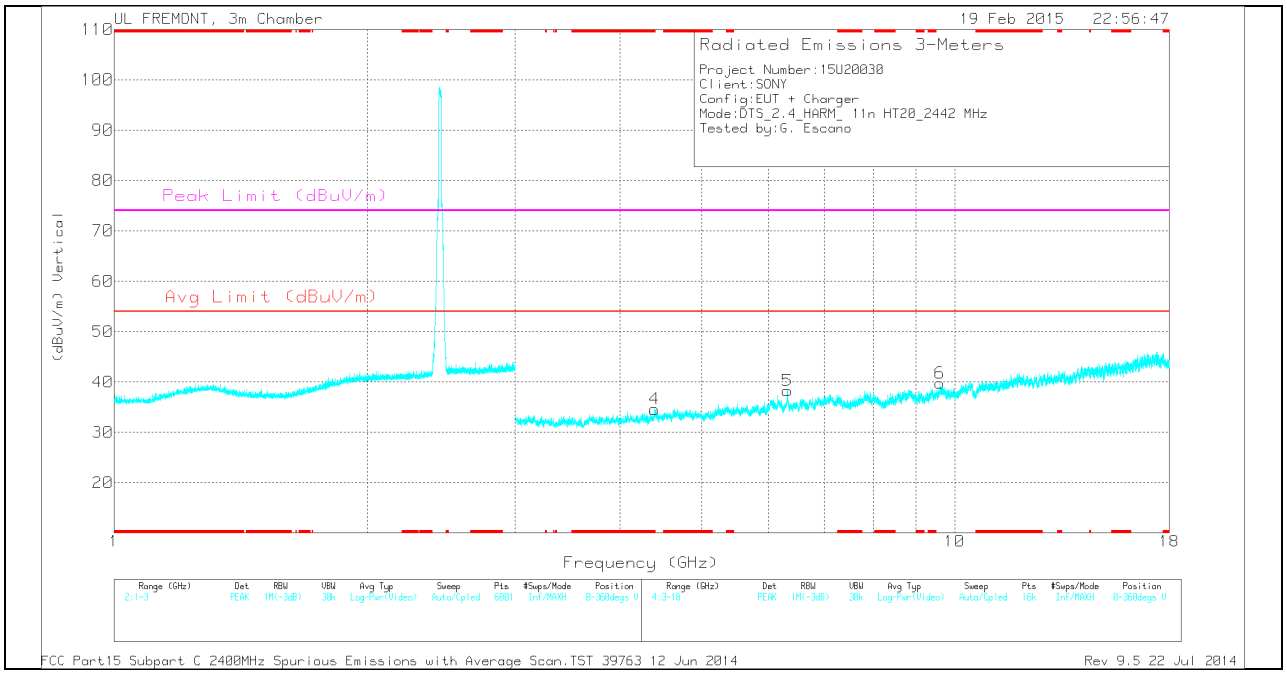
MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.393	31.11	PK	33.6	-30.1	0	34.61	-	-	74	-39.39	0-360	100	V
1	3.222	32.74	PK	32.6	-31.4	0	33.94	-	-	-	-	0-360	200	H
5	6.324	32.05	PK	35.4	-29.2	0	38.25	-	-	-	-	0-360	200	V
6	9.607	28.27	PK	36.7	-25.2	0	39.77	-	-	-	-	0-360	200	V
2	14.836	31	PK	39.8	-26.8	0	44	-	-	-	-	0-360	200	H
3	17.635	27.74	PK	41.4	-22.9	0	46.24	-	-	-	-	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.393	40.1	PK2	33.6	-30.1	43.6	-	-	74	-30.4	327	168	V
* 4.393	27.95	MAv1	33.6	-30.1	31.52	54	-22.48	-	-	327	168	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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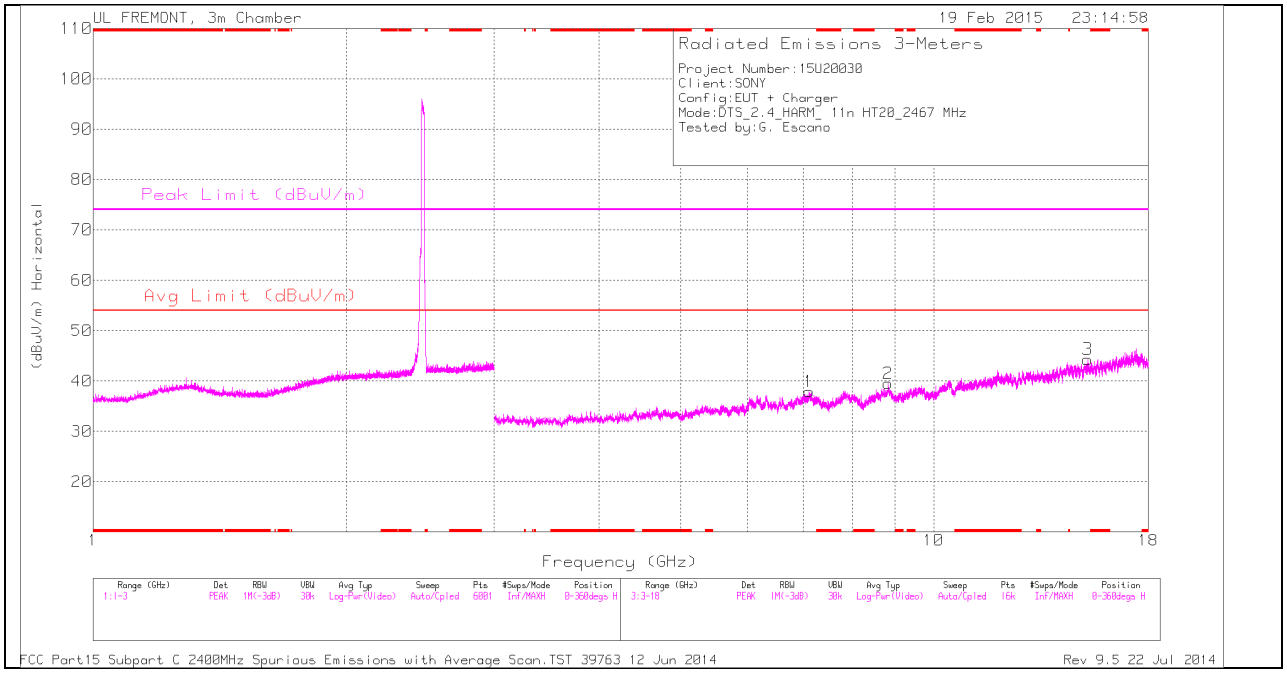
HIGH CHANNEL 12 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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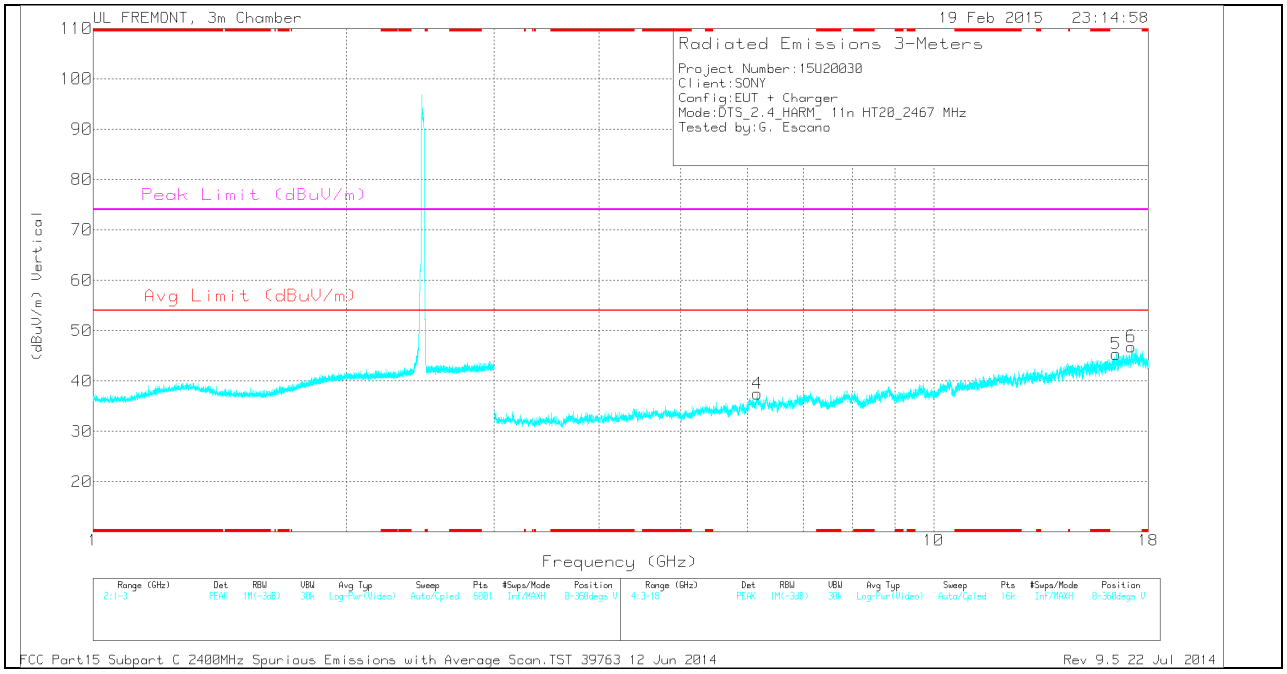
HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	6.169	31.89	PK	35.3	-29.7	0	37.49	-	-	-	-	0-360	100	V
1	7.11	30.28	PK	35.6	-28	0	37.88	-	-	-	-	0-360	100	H
2	8.822	30.22	PK	35.9	-26.6	0	39.52	-	-	-	-	0-360	200	H
3	15.243	30.8	PK	39.9	-26.4	0	44.3	-	-	-	-	0-360	200	H
5	16.479	29.06	PK	40.9	-24.6	0	45.36	-	-	-	-	0-360	200	V
6	17.187	28.61	PK	41.3	-23.1	0	46.81	-	-	-	-	0-360	100	V

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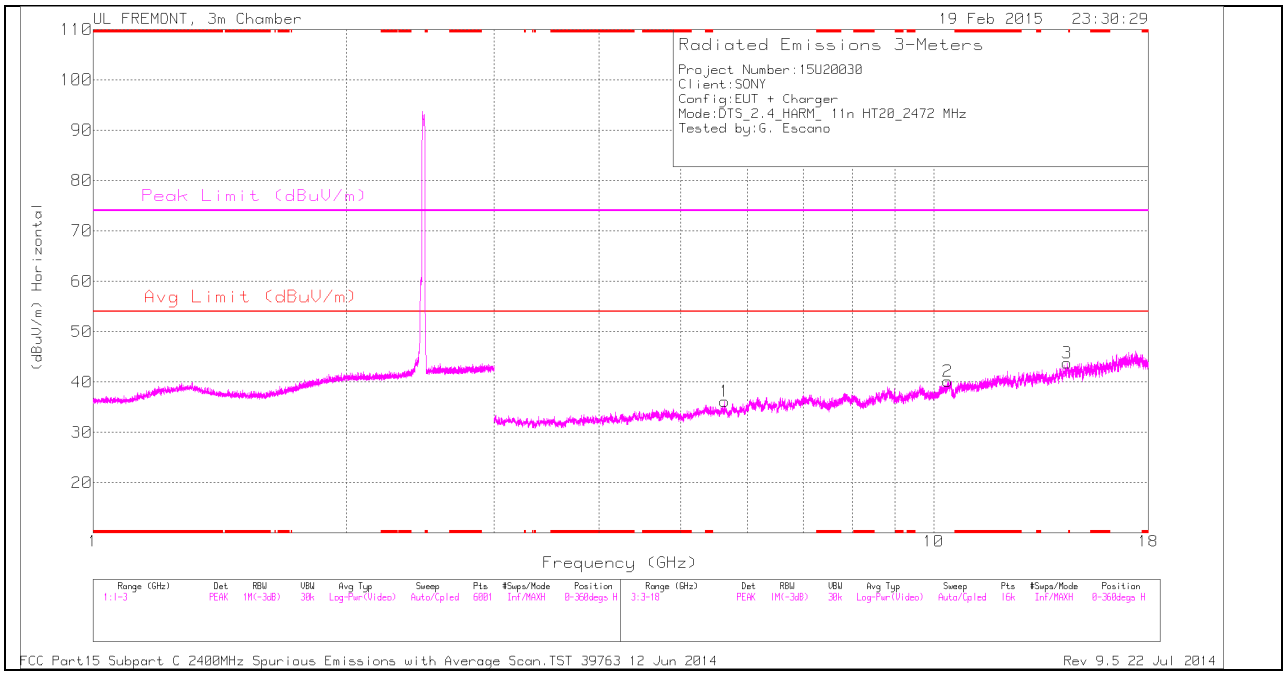
HIGH CHANNEL 13 HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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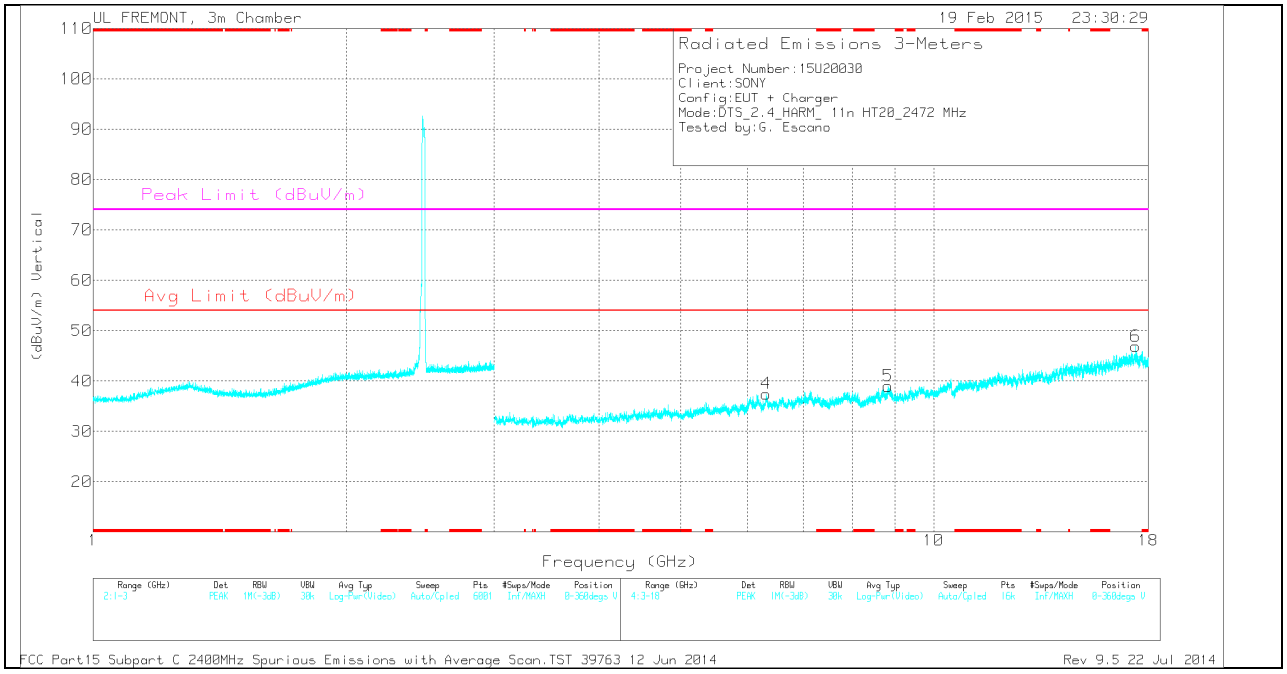
HIGH CHANNEL 13 VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.639	30.93	PK	34.7	-29.5	0	36.13	-	-	-	-	0-360	100	H
4	6.319	31.46	PK	35.4	-29.4	0	37.46	-	-	-	-	0-360	200	V
5	8.829	29.68	PK	35.9	-26.6	0	38.98	-	-	-	-	0-360	100	V
2	10.394	28.46	PK	37.3	-25.6	0	40.16	-	-	-	-	0-360	200	H
3	14.422	30.67	PK	39.6	-26.5	0	43.77	-	-	-	-	0-360	100	H
6	17.39	27.99	PK	41.4	-22.5	0	46.89	-	-	-	-	0-360	200	V

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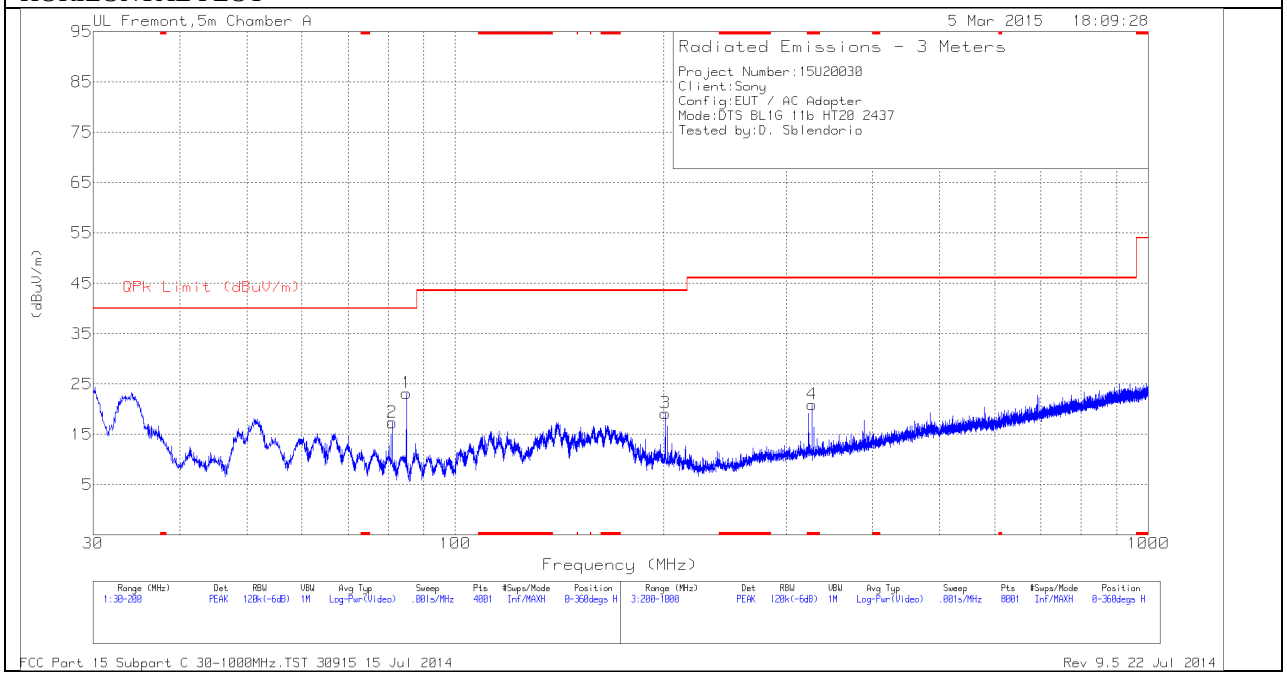
11.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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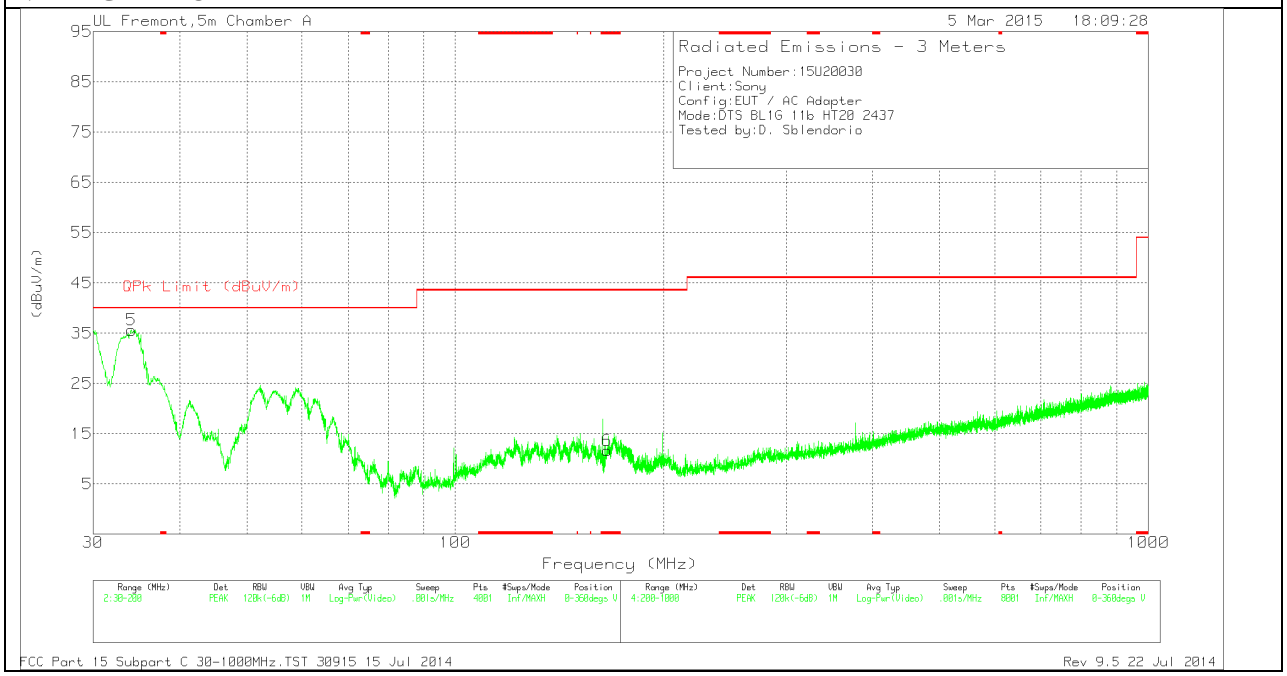
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 165.49	30.14	PK	11.7	-30.2	11.64	43.52	-31.88	0-360	101	V
4	* 326.9	36.37	PK	13.9	-29.3	20.97	46.02	-25.05	0-360	101	H
5	34.08	48.4	PK	18.4	-31.2	35.6	40	-4.4	0-360	101	V
2	81.085	40.86	PK	7.2	-30.7	17.36	40	-22.64	0-360	400	H
1	84.995	46.62	PK	7.3	-30.7	23.22	40	-16.78	0-360	300	H
3	200.9	36.72	PK	12.4	-29.9	19.22	43.52	-24.3	0-360	200	H

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12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

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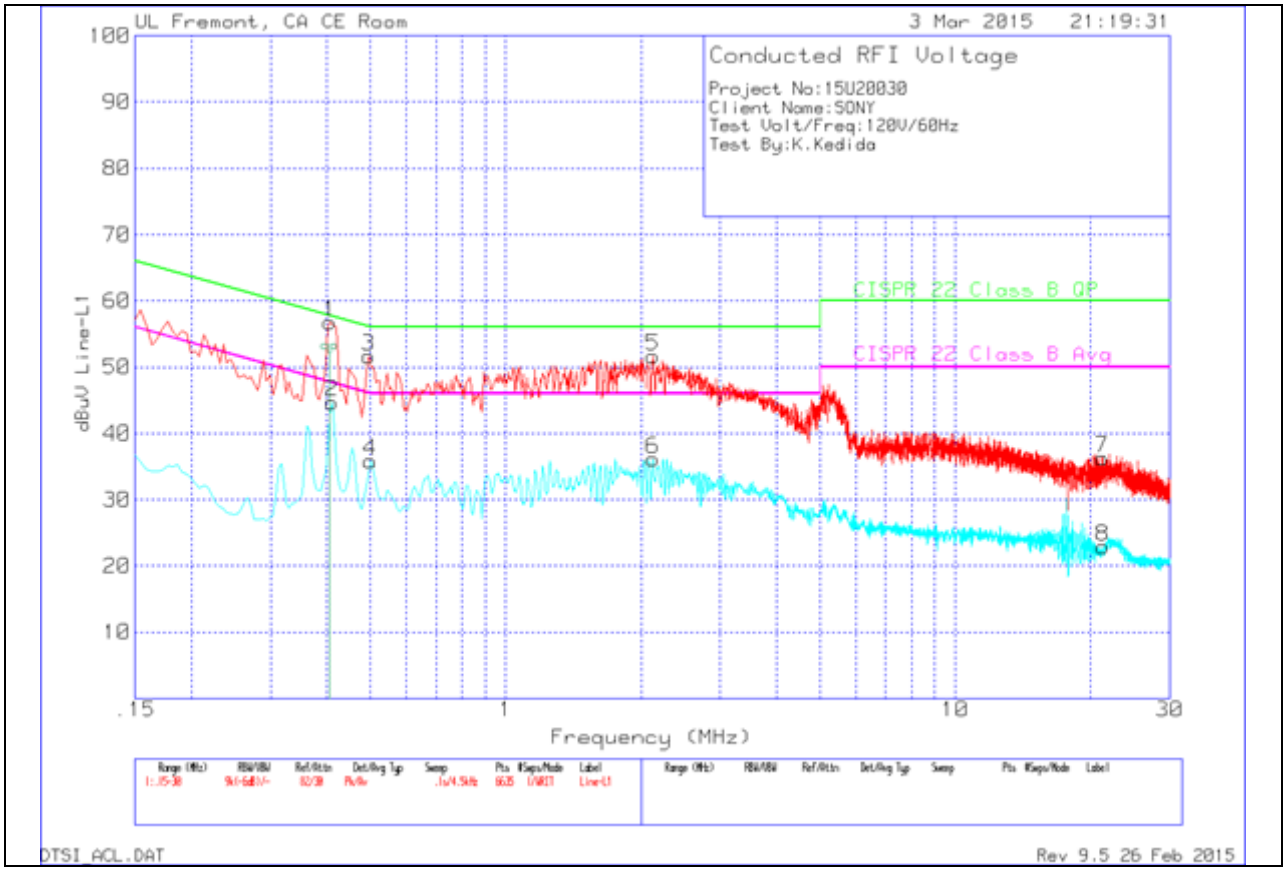
6 WORST EMISSIONS

LINE 1 PLOT



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LINE 1 RESULTS

Line-L1 .15 - 30MHz

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	QP Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.4065	56.34	Pk	.4	0	56.74	-	-	-	-
2	.411	44.34	Av	.4	0	44.74	-	-	47.63	-2.89
3	.4965	51.36	Pk	.3	0	51.66	-	-	-	-
4	.501	35.52	Av	.3	0	35.82	-	-	46	-10.18
5	2.1255	51.37	Pk	.2	.1	51.67	-	-	-	-
6	2.1255	35.88	Av	.2	.1	36.18	-	-	46	-9.82
7	21.246	35.75	Pk	.3	.2	36.25	-	-	-	-
8	21.282	22.44	Av	.3	.2	22.94	-	-	50	-27.06

Pk - Peak detector

Av - Average detection

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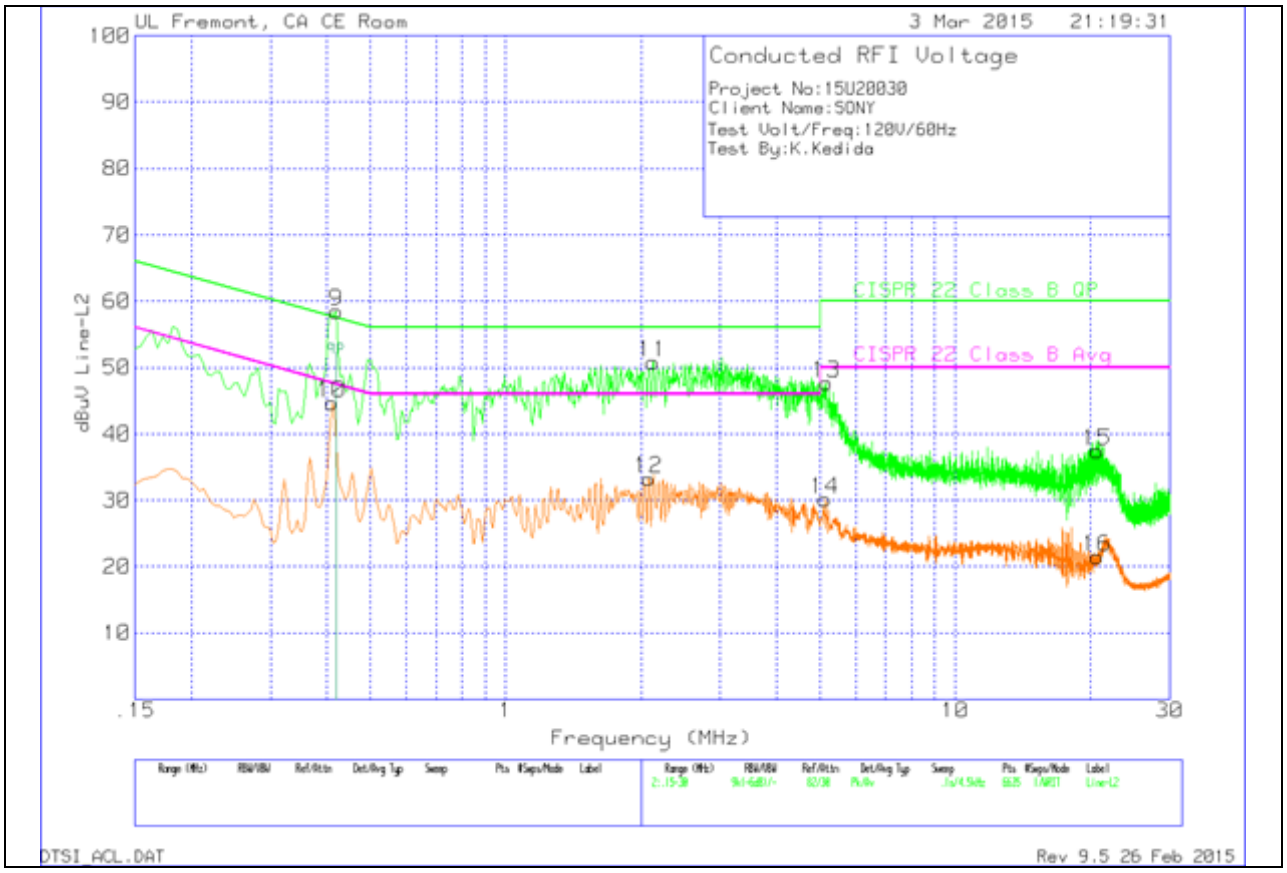
LINE 2 PLOT



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LINE 2 RESULTS

Line-L2 .15 - 30MHz

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	QP Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.42	58.04	Pk	.4	0	58.44	-	-	-	-
10	.411	44.26	Av	.4	0	44.66	-	-	47.63	-2.97
11	2.1255	50.51	Pk	.2	.1	50.81	-	-	-	-
12	2.0805	32.94	Av	.2	.1	33.24	-	-	46	-12.76
13	5.172	47.41	Pk	.2	.1	47.71	-	-	-	-
14	5.127	29.88	Av	.2	.1	30.18	-	-	50	-19.82
15	20.67	36.97	Pk	.3	.2	37.47	-	-	-	-
16	20.67	21.02	Av	.3	.2	21.52	-	-	50	-28.48

Av - Average detection

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